Canadian Centre for
Occupational Health
and Safety

Centre canadien
d'hygiène et de
sécurité au travail

# WHMIS
# Are We Ready?

# A Workshop

P88-25E

# WHMIS - ARE WE READY?

## A Workshop

Hamilton, Ontario

September 27, 1988

Canadian Centre for Occupational Health and Safety

CCOHS/CCHST

90-01079/

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**CCOHS NUMBER P88-25E**

**ISBN 0-660-13087-4**

**DSS CATALOGUE NUMBER CC273-2/88-25E**

This publication is available
in both official languages.

Cette publication est disponible
dans les deux langues officielles.

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Published 1988

Additional copies available upon request.

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CCOHS/CCHST

The Canadian Centre
for Occupational Health and Safety
A Workshop

**WHMIS — ARE WE READY?**

Tuesday, September 27, 1988
Sheraton Hamilton Hotel
Lakeview Room, Centre and East Sections
Hamilton Ontario

OBJECTIVE To exchange and share information, establish communication and explore cooperation and resources.

**AGENDA**

8:15 am Registration and Coffee

9:00 am Welcome — Introduction of Workshop

9:10 am THE CENTRE: What we saw as the need
How we geared up for it
How we can help

Bill Louch, Director, Technical Services
Canadian Centre for Occupational Health and Safety

10:15 am COFFEE BREAK

10:30 am COMPANIES: How they prepared for WHMIS
Where they are now

Andrew Kramer, Facilities Manager
Spar Aerospace Ltd

Bruce Waechter, Manager
Labour Relations Planning,
and
Bob Kelly, Chairman
Canadian Auto Workers
Ford Health & Safety Committee
Windsor Plant No 1, Ford Motor Company

Brief presentations from participants describing their programs are invited.

| | |
|---|---|
| 12:00 noon | LUNCH – Lakeview Room, South and West Sections |
| 1:15 pm | NETWORKING – PETROLEUM INDUSTRY<br>How one industry organized itself to achieve consistency and diminish duplication<br><br>Guy Ethier, Environmental Health Coordinator<br>Esso Petroleum Canada |
| 2:30 pm | COFFEE BREAK |
| 2:45 pm | TRAINING & EDUCATION: A JOINT PROJECT<br>Planning for it<br>The workshop<br>The funding<br>The project<br><br>Clarence MacPherson, Executive Director<br>Workers Health & Safety Centre<br><br>Philip Noye, WHMIS Training Coordinator<br>Industrial Accident Prevention Association |
| 4:00 pm | GENERAL DISCUSSION<br><br>CLOSE OF WORKSHOP |

# INTRODUCTION

**Lillian Vine**

Good morning and welcome. I am delighted to see so many here. I apologize to those we could not accommodate. Our president would have like to be here but he is speaking in BC today. He asked me to pass on to you his welcome and to say how delighted he is that the Centre can help with WHMIS. We feel that by your coming together and sharing your problems, your uncertainties, your solutions, occupational health and safety will be served. You were invited to make brief presentations from the floor; some of you accepted. Chris Edwards of Van Waters & Rogers will be making a presentation and Peter Slisarenko of MATRIX Interactive Systems Corporation will be doing a brief demonstration. In the hall, Reteaco Hardware Sales will be demonstrating their hardware and our CCINFOdisc. There will be translation throughout.

What led us to the workshop today is the success of the ones on classification that started back last February. They started with a request last December 3 for a classification workshop. It was planned for February and was quickly sold out. The February one was followed by one in May, which also was sold out. At the May workshop it was obvious that people still wanted to communicate with others about where they were with WHMIS; that there is a will to comply and do it right. It seemed a good idea to do another workshop just before implementation. The same thing happened; this workshop sold out with a long waiting list.

Our first speaker is from the Centre, Bill Louch, our Director of Technical Services. Bill is a Hamilton boy who came back to Hamilton to do good. He received a BSc Honours in 1969 and a PhD in Inorganic Chemistry in 1972 from the Chemistry Department at McMaster University. From 1972 to 1974, he taught at the University of Western Ontario as a Post Doctoral Fellow. In 1974, he joined the Government of Newfoundland as an Environmental Chemist with the Department of Consumer Affairs and Environment and in 1978 became an Occupational Hygienist with the Department of Labour and Manpower. In 1980, he joined CCOHS as a Project Scientist, became the Manager of the Material Hazards Section of Technical Services in 1982 and in 1984 was appointed Director of Technical Services.

As Director, he is responsible for the work of a group of subject specialists providing responses to inquiries, printing publications and working on data bases on subjects including chemical hazards, physical hazards, safety and occupational medicine.

Bill will talk about how the Centre prepared for WHMIS, what it has done and what it is doing now.

## Bill Louch - Canadian Centre for Occupational Health & Safety

I would like to add my own best wishes to Lillian's. I hope today is interesting and useful. I hope today gives you some insights about what is going on with other organizations as they strive to implement WHMIS and gives you a chance to talk about your own programs. I am going to talk about CCOHS, the work we do, and how, in the eyes of some, there are strong interactions between the work of the Centre and the implementation of WHMIS.

The beginnings of the implementation of WHMIS are close at hand, and we have gathered here to talk about whether we are ready. I hope the answer is yes, or almost ready, because time is running out. I am reminded of the physician who had to phone his patient to say "I have bad news and worse news. The bad news is that the lab report says you have 24 hours to live." As you can imagine, the patient was a bit shattered by this and it took him a minute to recover. But he said "OK, I have got to get on with things because I don't have much time left. What could possibly be the worse news?" "The worse news is that the report came in yesterday and I forgot to call."

Time is running out.

CCOHS and WHMIS share a common background, a common heritage. Both are products of a fundamental restructuring that went on in occupational health and safety in the 1970s.

In the '70s, we saw the creation of new institutions, the bringing together of legislative and regulatory activities into single departments and new activities across the country. It was the kind of restructuring that we had not seen since the days of World War I when Canada began to move toward a compensation system.

The changes went beyond the mere restructuring of government agencies because it included the idea of participation. There was a need to harness the knowledge and enthusiasm of workers and managers in tackling health and safety problems. The need for participation reflected a growing understanding that health and safety performance was not going to improve if we relied only on inspectors and a professional delivery system. The hope for progress lay in harnessing the enthusiasm of workers and managers.

The result has been a movement to create health and safety committees. That movement is pretty well in place; it took almost a decade but now some form of worker/manager participation in health and safety is the norm across the country.

But it did not stop there because what we began to see was the placement of some responsibilities on the parties involved. There was a right-to-refuse or perhaps a responsibility-to-refuse--an individual faced with what s/he believed to be an

unduly dangerous task was given the right or responsibility to say that a job was too dangerous. Based on those sorts of things the country hoped to see some improvement in occupational health and safety.

For the right-to-participate and the right-to-refuse to have any meaning, it is necessary for people to have an understanding of the issues they are dealing with--knowledge and information. Underlying all of these changes is the "right-to-know." Workers and managers have a right to information and knowledge about the hazards of the materials they deal with or the work they do. While we saw the restructuring of agencies in the 70s, we also saw the legislative requirements for health and safety committees coming into place. We saw the right-to-refuse and the protocols for exercising the right-to-refuse. We had not yet seen any structure to the right-to-know until WHMIS came along. And WHMIS, the Workplace Hazardous Materials Information System, is the beginning of the formulation of the right-to-know in Canada.

I do not think anyone would argue that we have come to the end of the road in the restructuring; but we are actually beginning in about six weeks to take our very first steps in implementing a right-to-know system in Canada.

CCOHS is very much a creature of these same pressures. The Act that created the Centre was passed in 1978 following a lot of discussions involving the same kind of people who were involved with the restructuring of all health and safety in the country. There are those who argue that the Centre is the national response to these right-to-know pressures. It was created as an organization governed by a tripartite Council of Governors representing employers, labour and governments. It was created to provide industry, labour and government with independent, unbiased and reliable information. When the Centre opened its doors in 1980, it first offered an inquiries service. We said if you have a question about health and safety, ask us and we will do our best to provide you with an expert answer. In 1980, we answered 500 inquiries. That has been successful and the numbers speak for themselves; in the current year we will probably answer 24,000 questions from Canadians about occupational health and safety concerns. Even in 1980, we were convinced that this would be an important, useful and successful operation. But we were also convinced that the demands would outstrip the resources to deal with inquiries if we decided to continue running on a one-to-one basis. Early on, we made a commitment to the development of electronic systems that would allow people to answer their own questions. By 1982 the nucleus of an electronic system, CCINFO, began to provide information to people across the country. It provided information through terminal links using the telephone network and by 1982 six organizations were using the system. As of September 1, that number had grown to 909 organizations using CCINFO through the data transmission network. But even here, success has its problems. Two years ago it became clear to us that the growth of CCINFO was going to outstrip the resources. We did not have a computer big enough

to handle unlimited access, the kind of access that Canadian occupational health and safety committees need. So we looked for an alternative. One of the alternatives was the development of a very large mainframe computer system that would have set Canada back millions of dollars; and it too would eventually reach its limit. It was our conclusion that that was an unlikely scenario. As an alternative we turned to the compact disc as a way of distributing information broadly across the country at a modest cost. This compact disc is, in my opinion, beginning to revolutionize the way in which information is generally handled and has certainly turned occupational health and safety information on its ear. That compact disc has the capacity to store in excess of 300,000 pages of text. That means that we now have the capability of carrying around complete libraries in a briefcase.

When we introduced CCINFOdisc, one of the limitations was that there were not enough disc players around to accommodate it. People told us that we were too early, that we could not sell something like that because the equipment was not in place to deal with it. It has turned out that the information pressures on health and safety are such that the availability of CCINFOdisc is driving the sale of disc players. From a start of a year and a half ago when we first introduced CCINFOdisc, we now have 1,928 CCINFOdisc subscribers. I expect the Centre to reach a milestone of 2,000 discs about next Wednesday. To complement the inquiries and the electronic system we have developed, we have also become a major publisher, putting health and safety information on paper. Many of you will recognize our publications, such as the Chemical Hazard Summary, which are typical of the kind of information the Centre has been producing for a number of years. We are now producing one-page publications that are attempts to deal with the question of how to get information on chemicals out to the Canadian workplace.

In 1980, we opened the door to the business of answering people's questions and asked how we could be of service. And people brought us questions. From a trickle to a flood they brought us questions. The questions they brought us were about chemicals--the hazards of chemicals. There are other questions--medical questions and safety questions--but from the earliest days, the majority of the work that came to the Centre had to do with chemicals. With the pressure on WHMIS now, nearly 70% of all of the inquiry work we do in one way or another relates to chemicals.

Simply put, there are two questions--what are the health and safety hazards posed by chemical X? The second question is not actually phrased in that way, but we have learned a great deal about it by talking to people and trying to understand what their background is in chemicals. The second question deals with things like "What is an $LD_{50}$?" "What is a corrosive?" "How do chemicals enter the body?" "What are the routes of uptake?" These questions indicate a tremendous need for background and educational information.

On the question of what are the hazards of chemicals, there are chemicals which we call trade names, for example, "Gucksolve 32." People come to us all the time asking us about the hazard of Gucksolve 32. The name gives no indication what that product is and there is no way they can find information about that product on their own. The tradition is that the answer to that question came from the suppliers of the product in the form of a Material Safety Data Sheet. It was clear to us that

people needed to have this MSDS and needed to have access to it. The first development of a data base by the Centre, as opposed to a data base we acquired from an organization outside, was the TRADE NAMES Data Base--an electronic Material Safety Data Sheet repository. It was clear that there was a tremendous demand for a comprehensive data base that would provide current, updated and bilingual information on the hazards of Gucksolve 32.

That it needed to be electronic was inarguable--it is just not possible to deal with that volume of information on paper.

Over the years, TRADE NAMES has grown to be the largest publicly available computerized MSDS collection in the world. We have MSDSs on about 40,000 products that have been voluntarily contributed by some 200 suppliers of chemicals to the Canadian economy. With WHMIS coming and its reliance on MSDSs, the TRADE NAMES Data Base has attracted incredible attention. On the online system, CCINFOline, until about a year and a half ago, the most popular data base was NIOSHTIC, a collection of information that came to us from the National Institute of Safety and Health in the US. Then, TRADE NAMES passed NIOSHTIC to become the most popular data base among users of our system. It is satisfying that a data base built in Canada on a shoestring is so broadly useful to Canadians.

The importance of TRADE NAMES also comes from the way in which it has been built. It started with the voluntary contributions of MSDSs by members of the CCPA (Canadian Chemical Producers' Association). It was given a major boost about five years ago. The Ontario Hospital Association concluded that the only way hospitals could cope with MSDSs was by using a repository like TRADE NAMES. Rather than start their own, they threw in their lot with us and encouraged the participation of those who sell chemicals to the hospital industry. That has become a model. Perhaps three dozen such organizations are now encouraging their suppliers to contribute MSDSs to this data base.

WHMIS is also forcing suppliers to realize that computerization is the only way they too can begin to cope with their MSDS work. The result has been that we are beginning to receive MSDS collections from suppliers in electronic form. They can be read directly into the system. That in large measure accounts for the rapid growth of the system in the last year.

TN (TRADE NAMES) is perhaps the most user-driven data base of its kind in Canada--maybe in the world. The companies represented in TN are there because people want them there and because the companies want to be there.

Before we began this morning, there was some discussion about the regulatory status of TN. I found it interesting that while the Ontario regulators equivocate about the position of TN, TN on disc is being very strongly picked up by the international community. It is now quite clear that the Australian National Commission is going to have a national MSDS program and it is their intention to base the international part of that on CCINFOdisc. The State Department of Health in New Jersey has recently moved strongly into local public right-to-know information. They too have made a strong commitment to CCINFOdisc as a means of meeting public right-to-know pressures. There is an important development that involves CCOHS and several United Nations agencies that will put poison control information in the hands of the Third

## THE CENTRE

**What we saw as the need**

**How we geared up for it**

**How we can help**

CCOHS/CCHST

World countries. It will be a model like that discussed with Australia where there will be a local component supplied by the nation involved but the international component will be carried by CCINFOdisc. Internationally, CCINFOdisc is moving very strongly.

Going back to the kinds of questions that were asked about the hazards of a chemical, if the chemical is not Gucksolve 32, it is a named chemical--such as acetone or xylene or toluene. The kind of chemical about which, knowing its name, a toxicologist can give you information on its hazards. We have had many questions of that kind. It led us to develop the publication series I alluded to earlier--the Chemical Hazard Summaries and CHEMICAL INFOGRAM one-pagers. Even there, we decided there was room for a Centre-created electronic system and we created a data base called CHEMINFO.

CHEMINFO differs from the TRADE NAMES Data Base in that it deals with individual chemicals instead of complex mixtures that are the subject of MSDSs; and instead of being the suppliers' it is the view of the subject specialists at CCOHS. We know that CHEMINFO is used by many people for many reasons. With the pressure on WHMIS, it s used by those who classify, label and write MSDSs for products in Canadian commerce. In the long run, it will have a variety of uses from MSDS writing and labelling to use by employees who want more detailed information than is supplied by an MSDS and by people interested in transportation information and by people dealing with waste disposal. CHEMINFO's importance is shown by a milestone similar to TN. About six months ago, NIOSHTIC was put into third place by CHEMINFO. Now the two most popular Canadian health and safety data bases are the Centre-created ones dealing specially with the kinds of information needs that are driving WHMIS.

There are other kinds of needs. Today we will hear a good deal more about WHMIS educational needs. We at CCOHS have made at least a small contribution here as well. I have talked about the publications that deal with individual chemicals. Many of you will be familiar with other CCOHS publications. You will have seen publications like "How Chemicals Enter The Body," "MSDS - An Explanation of Terms," or "MSDS - A User's Guide." These are responses by the Canadian Centre to demands from people as they try to confront WHMIS. These publications have become instant best sellers. In fact, they have become so successful that we are having some difficulties with our financial people about how we are going to continue to afford to put ink on paper.

The distinction between the publications and the electronic systems are beginning to blur now as we have found ways of moving the publications to the disc.

There is yet another CCOHS electronic development that I think has a direct bearing on WHMIS. It is the technology that we call Videotex. You will perhaps remember years ago seeing what was then called Telidon in hotels and airports. You could use a terminal to find out what was playing at the local theatre and the local tourist attractions. That technology has developed. Now, two or three generations removed from Telidon, it is called Videotex. It allows the use of computer animation and graphics to convey information. We have pioneered the use of this technology in an occupational health and safety information context to develop training packages that are being used across the country.

A feature of the CCOHS Videotex work is that almost all of it is undertaken in cooperation with other organizations. We have recently completed the development of a videotex package with the Ontario Hospital Association. Hospitals have been plagued with compensation bills associated with back injuries. It seems that the principal causes are stresses and strains involved with handling patients. The OHA came to us with a proposal that we jointly develop a training package. That package is now being used across Ontario in hospital training sessions and in other parts of the country.

We recently completed a couple of projects with the government of the Northwest Territories. They have a unique problem dealing with health and safety information in a native population that speak neither English nor French. They felt that a Videotex approach might be a useful way of getting across information about the hazards of dust inhalation. The result was a package that deals with the effects on the lung of dust inhalation that provides information in the languages of Inuktitut and South Slavey. It was an exercise from which we learned a great deal and it has pushed our technology to the point where we are now able to produce Videotex with sound as a videotape.

On the disc or on a floppy, videotex is a highly interactive training medium. On videotape, it is a more linear approach to training without the interaction that you have with computers. But it is a delivery system that is widely available. You will see within the coming weeks and months the emergence of a number of training packages that employ either or both the videotape and videotex technology.

There are opportunities to cooperatively produce WHMIS-type training materials. The opportunities are there to develop packages that can be used in individual workplaces and that can be broadly made available to Canadians.

What I have talked about are ways in which we anticipated the pressures WHMIS would bring. We developed a TRADE NAMES Data Base that provides a current, updated, bilingual material safety data management system. It was built cooperatively and collaboratively and at a pace that is responsive to those involved with us in the system.

We have created a Material Safety Data Sheet information resource in CHEMINFO.

We have begun to develop materials which people are using in their training programs, and we have developed the industry facility which is available to people to further develop training information programs.

There are things that we did not anticipate. Many of you will be struggling with in-plant labelling problems. We, until very recently, have not done very much along that line. People have come to us recently saying that what is needed is a label data base that parallels the TRADE NAMES Data Base. It would provide the opportunity for users to produce a facsimile of the manufacturer's label to handle their internal labelling needs. It would deal with some of the liability issues that are bothering the chemical suppliers when their customers ask for extra copies of labels. It is an idea that is being talked about at this stage; whether or not it will develop further depends on the indications of support and interest.

We have undertaken with Agriculture Canada to develop a data base of pesticide information from their collection of labels. As you know, Agriculture Canada is the agency responsible for registering pesticides. For years they have maintained a collection of pesticide labels. They have concluded, because of their successful work with us in other data bases, that there would be interest and use in having the information on pesticide labels available on CCINFOdisc. If it proves successful it might arouse interest from the chemical industry to see it expanded to cover industrial chemicals.

I should caution you that we at CCOHS are under enormous pressures. The inquiry demand is spiralling, driven among other things by WHMIS. I hope that by next summer, some of that will have died down; but there is enormous pressure on us to provide information on WHMIS. At the same time, with the enthusiasm that the TRADE NAMES Data Base has generated, there is far more work in TRADE NAMES than we can manage. Data Sheets are coming in at a rate fast enough that we cannot hope to begin to process them, especially if they come to us on paper. As the industry computerizes, we are able to deal with the information in a more timely fashion. But unless and until the industry gets itself organized to be able to deal with us electronically, the TRADE NAMES Data Base will probably not develop at a pace that would please most of you.

In the same vein, CHEMINFO is not proceeding nearly quickly enough to meet all of the information needs of WHMIS. Like TRADE NAMES, CHEMINFO could be developed more quickly and more effectively with the enthusiastic support and participation of Canadian industry. While there is enthusiasm for it, we have not yet found a way to harness it.

I hope that this sketches for you what we are doing to help meet WHMIS information needs. We do not have all the answers, but we have some things that are of use to Canadians dealing with WHMIS. We have the nucleus of a computer system that will make it possible to implement WHMIS at a reasonable cost. We have the nucleus of an education and training technology that could cooperatively see WHMIS education delivered in Canadian workplaces in a matter of months at costs that people could afford.

The price, of course, is cooperation and support.

## DISCUSSION

**Lillian Vine**

Bill, thank you very much. It is clear from Bill's presentation that we did not wait for WHMIS; we started this work at our very beginning. Before Bill came to the Centre, the Council of Governors decided that the priority for the Centre was to give people the information they needed. We were responsive. We pre-dated WHMIS because people were asking us a lot of questions about chemicals from the start. We may not be quite ready, but we would have been much less ready had we not started when we did.

One of our publications is the proceedings of workshops. Unfortunately, these have succumbed to the cost of putting ink on paper and, except for participants, are charging for them.

The floor is open for questions and discussions. I would invite the other members of the head table to take part.

**Louis Ray - Dow Chemical**

You talked about putting knowledge together, but I am also aware that knowledge changes, new information on what is known is coming through. You have not talked about how you update the information you already have. Could you discuss that please?

**Bill Louch**

There are varying kinds of information. In the bibliographic system, for instance, the information on a publication does not change; it just gets older. Information on new developments and new studies in toxicology of chemicals do change the way in which you look at things. It may not change as rapidly or as radically as many people think, but new information does become available. We went to a disc system based on a quarterly update to deal with this new information. It was the feeling and the pressure of the chemical industry that if you are going to produce a Material Safety Data Sheet system, it must be rapidly updated. A quarterly update was the resulting compromise. In our Material Safety Data Sheet work, the first priority, ahead of creation of new records, is updates.

At the same time, our staff involved in the creation of CHEMINFO have the responsibility of keeping abreast of new information on chemicals. On an on-going basis, we go back into the CHEMINFO file and make changes reflective of new information.

We also make changes as new requirements are brought to our attention. Some of you who are experienced at using CHEMINFO will notice that you will begin to find information on the oil/water coefficient, because that is a WHMIS requirement. We are going back retrospectively, finding that data and adding it to the system. So we do update and we do it on a priority basis for TRADE NAMES and for CHEMINFO.

Let me repeat that changes of a profound nature in chemical information are not as common as people believe. Five years ago there was a study that reported formaldehyde caused nasal cancer in rats. But in the 15 years prior to that, there had not been a single important discovery made about formaldehyde. A CHEMINFO record that was good 20 years ago would have lasted 15 years.

**Larry Westlake - Industrial Accident Prevention Association**

If you were to direct a firm that was just now making a decision in terms of buying a modem to go online, or of subscribing to the CCINFOdisc system, would you tell them to go to the disc because it is so difficult to get through on the online system? Is there a problem as far as getting through?

**Bill Louch**

I would suggest that they go on the disc system, not because there is a tie-up on the online, because there is not that problem at present. I would make that recommendation because we can provide things on the disc that we cannot provide online. I floated a trial balloon about a label data base. There are two ways you could do that. You can do it based on a scan of a supplier label. That would incorporate the graphics. But we have no way of providing the graphics to people on the online system. We can provide videotext on the disc, but we cannot on the online system. We can provide the publications on the disc, but again we cannot do it on the online system. The price you pay if you go online is a more restricted access to information.

**James Lachance - Foseco Canada Inc**

When a supplier initially enters his MSDS into the system, do you check them to make sure they contain factual information? Can the supplier use a direct copy from the CCINFOdisc of those Data Sheets to send to customers?

**Bill Louch**

The second question is a regulatory one; you might want to put it to a regulator.

Let's deal with the first question. When Data Sheets come to us, we have a quality assurance program that first and foremost tries to ensure that we have faithfully reproduced what was on the original Data Sheet. We have a review process that depends on whether the Data Sheets came to us on paper or electronically. In the course of doing that review, we could see discrepancies. We have made a practice of going back to the suppliers, informing them that we have noticed inconsistencies and giving them the opportunity to look at them. We have never run into a problem. The reaction from the suppliers has always been "Thank you for pointing it out; it was a mistake." or "Thank you for pointing it out. It was not a mistake; we meant to do it that way." The Data Sheet is the supplier's responsibility. We have not had to come to blows about these sorts of things because if something is wrong the supplier is more than anxious to see it put right. They are the ones who are legally responsible.

The question you asked about whether a supplier can print a record from our data base and send it to his customers is one you should ask a regulator. I think it is probably OK because many companies generate their Data Sheets by computer. The location of that computer is irrelevant in terms of compliance with the law. I can see no reason why a supplier could not generate Data Sheets from our system and mail them out. There are companies whose MSDS collection exists only in our computer.

**Chris Edwards - Van Waters and Rogers**

What is the time-frame for updates? We have sent in our first batch of US MSDSs electronically and it takes a long time to get them through to the disc. MSDSs are always being updated. They can be up to six months behind; by then there may have been three revisions of an MSDS. I think they can be used as reference documents, but it is very difficult to use them as the official documents. Does anyone, particularly a regulator, have any comment on that?

**Bill Louch**

I can deal a little with the updating question. Our experience has been that the first time a Material Safety Data Sheet collection comes to us on tape, it does take some work to get it into the system. It is the luck of the draw how close to the production of the disc that work is completed. In the two dozen electronic collections we have entered, we have not had a six month delay. Having done this work once, subsequent update tapes are much more easily handled. The information is copied off our Hewlett Packard machine about six weeks before the disc comes out. It is not very likely that the information is going to be more than six to eight weeks old when it hits the disc. We also offer a between-discs update. It is included in the monthly update bulletin to subscribers provided we have been given the information telling which Data Sheets have been changed. You can then use the inquiries service or the supplier to get a revised Data Sheet if it is critical. I expect we will see a lot of revisions over the next year. Of the 40,000 Data Sheets

in the system, probably 38,000 are in the process of revision right now. There is going to be a tremendous amount of work to get the WHMIS revisions into place. Once that happens you will see updates on a less frequent basis.

**Larry Westlake**

I was very interested in your comment about a classification data base because one of the questions we get all the time is "Where do I go for a list of WHMIS classified materials?" At the moment there is none. I can see the Canadian Centre becoming the classification source of information. I would certainly encourage that development.

**Bill Louch**

Buried within CHEMINFO are the details of classifications for the chemicals we have classified. It is an unofficial classification, because there is no mechanism for an official classification. We are hoping to involve the chemical industry in building CHEMINFO to be the WHMIS classification repository.

**Chris Edwards**

How many products do you have on CHEMINFO now?

**Bill Louch**

We have between 500 and 600 chemicals. I would be interested to hear industry's reaction. If you read the popular press, you will hear that there are 10 million chemicals out there; between 500 and 600 is a long way from 10 million. But the number of chemicals in active commerce is much smaller than that. In my estimation, when 2,000 or 3,000 of the most important chemicals are done, you will find that 80% to 90% of the work you need has already been done in CHEMINFO.

Even so, a typical CHEMINFO record runs 8 to 10 pages and requires a week or 10 days worth of work; it is a lot of work to do 2,000 to 3,000 chemicals.

**Chris Edwards**

We have about 1,500 chemicals listed on our product list of the items we sell. Those are standard, general chemicals.

**Ester Ogbue - Ontario Hydro**

Several branches in our corporation have developed their own MSDSs and we have looked at your information sheet and thought it contained good information, but wondered whether you would work with industry to include some of the information that is specific to that corporation. We thought that if we could use your sheet it would get rid of all the excess information.

**Bill Louch**

Our Senior Management looked at a prototype two weeks ago that we have called ETN (Employer Trade Names). It is an electronic shell into which employer safety data sheets could be funnelled. Yours is not the first request; other companies have also asked us to develop a system to do just that. We have developed a prototype. But we are not in a position to undertake the development of yet another TRADE NAMES data base and try to single-handedly resource it. The information could easily be put into the computer and we have the distribution mechanism to get it back to you, but it must come to us in electronic form. What we have developed is an electronic shell into which an employer MSDS can be placed. It is up to you to decide if you want it.

**Chris Edwards**

Would this be similar to the CSST form they have in Quebec now? They have a framework for one in manual form.

**Bill Louch**

The focus is somewhat different. The CSST form is one which blends the supplier's MSDS and the CSST view about what should be said about the chemical. We have always tried to keep totally separate our role in CHEMINFO and the supplier's in TN. This employer data base could allow an employer to reformat a Data Sheet. Many employers like a standard format that did not come from WHMIS. In some jurisdictions, additional information is required.

**Lillian Vine**

The message from Bill is clear--we at the Centre can help you, but you have to help us to do it. We have been preparing for WHMIS for a long time; we can help but we cannot do it single-handedly.

# COMPANIES

**How they prepared for WHMIS**

**Where they are now**

CCOHS/CCHST

**Lillian Vine**

This session shows how some companies prepared for WHMIS and where they are now. Several presentations have been arranged; I hope some of you will want to speak spontaneously.

Andrew Kramer is the person who set in motion the process for this particular workshop. Many people still wanted to meet and speak, but Andrew was the one who specifically asked if we could do the workshop that has brought us here today.

Andrew Kramer graduated from the Budapest Institute of Technology in mechanical engineering, joined the Metallurgical Department there and participated in precision casting research. Subsequently, he introduced this technology at the United Incandescent Lamp and Electrical Works where he worked until the Hungarian revolution in 1956. He came to Canada, and for 17 years he was involved with vapour degreasing and the development of electronic grade chemicals at Northern Telecom. Presently, he is Manager of Facilities at the Caledonia Road plant of SPAR Aerospace Limited. Since 1986 he has acted as the Chemical Coordinator for that facility.

## Andrew Kramer - Spar Aerospace Ltd

I am here this morning to illustrate to you the safety practices in a machine parts manufacturing plant.

SPAR Aerospace Limited is engaged in the design, manufacture and servicing of systems and products for space, defence, communications, and aviation markets. The company employs more than 2,000 people, including about 600 engineers and technicians, one of the largest technological groups in the private sector in Canada. Sixty per cent of SPAR employees are shareholders in the Company. The two divisions serving the aviation industry manufacture and service aircraft and helicopter components as well as selling aviation products and accessories. SPAR is an industry leader in the production of high precision aerospace gears and transmissions. At our Toronto plant, lightweight, high speed power transmission systems and equipment are manufactured and assembled. This facility also manufactured, assembled and tested the joints of the remote manipulator system, known as the Canadarm for the space shuttle.

We believe our solutions to safety concerns are the best for our operations at this time. We developed our methods by learning how others in the industry are tackling similar problems and adapted the features which appeared to best serve our needs.

Early in 1986, the Vice President and General Manager of our Gears and Transmissions Division, recognizing the importance of the health and safety of our employees, appointed a "Chemical Coordinator" for the Caledonia Road facility. The coordinator is charged with the sole and total responsibility of all activities relating to hazardous materials. A direct reporting relationship to the Vice President has been instituted until such time as the Vice President is satisfied that proper controls are in place. We find that the success of this policy is dependent upon the continued commitment and support of senior management.

The first action of the coordinator was the collection of information from all available sources, such as IBM, Northern Telecom, CIL and McDonnell Douglas Aircraft, who already had a well-developed safety plan and organization. This was exceptionally helpful in the initial formulation of our strategic plan. Later on the Canadian Centre for Occupational Health and Safety proved to be a very valuable source of information. Attending workshops like this one exposed us to speakers who were experts in the field and facilitated contact and exchange of experiences with others in similar situations. Subscriptions to relevant periodicals and legal information services such as CCH for health and safety and product liability summaries provided additional information.

First we concentrated our effort to control the acquisition and inventory of chemicals in the plant. A procedure was established which required an approval number for the purchase of each new chemical. The number was assigned by the coordinator, usually only after the Material Safety Data Sheet was obtained and filed with him. This number was indicated on the purchase requisition, the inventory card, the order form going to the vendor and on a computerized log for auditing purposes.

There is always an exception. In the case where a material was urgently needed in the shop and a Material Safety Data Sheet was not available, we obtained information from CCOHS by modem. We feel that chemical information is crucial for a control program in any company because unless you know what you have in the facility you will not be able to control it. By knowing what is in your inventory you know what MSDSs you have to have and what training programs you need.

Security personnel are posted at each entrance to ensure that unauthorized chemicals do not enter the building.

The purchasing log is audited regularly to ensure that all chemical procurements conform with the procedures. The data base for approved chemicals was established after the initial inventory had been taken. First, we assigned the responsibility for taking inventory to the foreman of each production department and storeroom. When the results were audited it became apparent that to ensure accuracy it would be

necessary to have inventory-taking repeated by the staff of the coordinator. This involved looking into each nook and cranny, cupboard, locker, and cabinet for chemical containers. Some unidentified bottles were removed, obsolete materials were disposed of, unnecessary duplication was eliminated and, where possible, highly toxic chemicals were replaced by less hazardous ones.

This inventory information was entered into a computer data base. At that time no programs were commercially available. Using Oracle software, we developed an in-house program to meet our needs and enhanced it as additional requirements were identified. We can sort this information by date and can call up any MSDS that is older than three years. We also can sort by trade name which helps us catch unauthorized chemicals when they enter the receiving department.

Reports are available from this data base to determine which chemicals are used in each department. This information is used, for example, to determine training requirements for each area based on the inventory in the department.

The current Safety Act, which predates WHMIS, lists among the employer's responsibilities the need to provide instruction and to "acquaint the workers with the hazards in their work place." To comply with this obligation, we introduced a comprehensive training program early in 1987. Some unions organized safety courses based on training material developed by the Ontario Federation of Labour. We preferred a course that was based exclusively on scientific observations without political overtones. To obtain the best information available, we went to the Chemical Engineering Department's Industrial Hygiene Program at the University of Toronto headed by Professor Smith and requested the development of a training course to meet our special needs. Professor Smith and his associate, Mr Chuck Pilger prepared a package of eight modules. This package included (1) Hazard Identification, (2) Physical Agents, (3) Recognition of Health Hazards, (4) Evaluation of Health and Safety Hazards, (5) Exposure Guidelines, (6) Control of Chemical Hazards, (7) Personal Protective Equipment, and (8) Occupational Safety.

This represents an eight-hour course in which all shop employees participate. Initially, Mr Pilger and two of his former graduate students, both with Master degrees in Industrial Hygiene, delivered the material, which came complete with visual aids. Eventually, we developed our own in-house instructors who took over from Mr Pilger, but we always conducted classes in the presence of a qualified certified industrial hygienist.

The trainers include the Manager of Labour Relations and Safety, the Plant Engineer, the foreman responsible for waste disposal, the foreman responsible for the foam packing operation and the Health and Safety clerk. They participated in a two-day "Train-the-Trainers" Session conducted by an industrial hygienist. Each trainer taught the modules which were in line with his or her background and responsibilities.

Our consulting hygienist, Mr Hugh Nelson, made a very valuable contribution to this effort. We trained several hundred employees at this location keeping the daily class size under 25 participants. This represented a considerable investment of time and money. We also found that as our employees' awareness level increased, their comments and observations assisted us in reducing the hazards in their workplaces. The local union safety representative was always present at these sessions.

Once we presented this basic course to all our shop employees, we initiated the second phase of the education program. This involved one-hour sessions on a particular material or group of chemicals used at or near their workplace. These included isocyanates, cyanide, chromic acid, trichloroethane, Stoddard solvent, methyl ethyl ketone, paint thinners, aluminum and magnesium dust, cutting oils and others. The classes are conducted by professors from the University of Toronto (Professor Napier), medical doctors specializing in occupational health (Dr Kurtzer) or certified industrial hygienists (Mr Hugh Nelson).

I would like to take this opportunity to express my thanks to some of our suppliers who assisted us in this program by sending their hygienists, their video tapes and other audio visual materials. Bayer Canada, Castrol Oils and Hanson went to considerable lengths to meet our needs. It is much appreciated. Some other companies, mostly large petrochemical manufacturers, refused to provide any assistance, much to our dismay. We found that one of the commercially available safety training materials demonstrated a shop operation where employees were cleaning up chemical spills without adequate personal protective equipment. The use of such training material is at best questionable.

Training sessions were useful in allaying the fears of some employees working with specific chemicals. After thorough instruction by a University of Toronto professor and a medical doctor, the workers felt fully informed and confident. A lack of communication and training at another company resulted in a long and costly work refusal involving the same chemical.

At each training session the attendance is carefully recorded on "sign in" sheets. This provides the control, and if required, the proof that each employee received the training deemed necessary to perform his/her job functions.

The third member of the WHMIS triad is labelling. We are experiencing some difficulties in this area. Having developed an extensive chemical data base for inventory and information control purposes, it appears absurd to repeat it to satisfy the needs of a labelling program. The large number of different workplace labels required makes manual preparation unattractive. The commercially available computerized labelling software offered to us, as of mid-August, was incapable of extracting information from our Oracle-based data bank. As several other firms in the industry are likely to be in a similar situation, we believe there is a market for flexible labelling software to meet WHMIS requirements. To satisfy the regulations regarding designated substances, we must first identify which product contains any of these materials and where it is used in the plant.

Thus far, the government of Ontario has designated only 11 chemicals for which separate regulations were published. These are acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride. We identified 104 compounds which contain one or more of these materials. It was further determined that some are used in several work stations. The law obliges the employer to prepare a written risk assessment for each of these situations.

The next step was to substitute less hazardous materials for designated substances where it was feasible. In certain areas this proved difficult. Paint specifications for our products are determined by our customers. Their formulas contain isocyanates. There was a situation which unavoidably called for an assessment.

We have two paint shops with a total of three work stations. Air contamination tests indicated a very low isocyanate level well below the allowable limits. The general policy is to consider engineering controls whenever the contamination level exceeds 50% of the permitted threshold limit value (TLV). In this case, however, due to the hazards of possible sensitization and the apprehension of our employees, the following are some of the actions which were taken:

- For protection from possible exposure, each employee was provided with individual air hoods along with protective work clothing.

- To ensure that contamination was not carried out of the work area, each employee was assigned two lockers, one for street clothes and the other for protective attire. Showers are available and their use is encouraged.

The spray booth's exhaust systems are tested quarterly and the results documented. The filters for the supplied air hoods are changed monthly. The workplaces are isolated and only the painter is allowed in the area when the unit is in operation. Air testing is performed at regular intervals. All employees are under a medical surveillance program, and their exposure to isocyanates is recorded. A hazard assessment is prepared by the area supervisor on the IAPA standard form. It is reviewed by the chemical coordinator and, in some cases, by the consulting hygienist before being submitted to the joint safety committee for approval. Air quality monitoring is an important part of our safety effort. To ensure that the results are not only correct, but also perceived to be impartial, all tests are performed by a reputable commercial testing firm. All technicians at Monserco are graduates of hygiene courses at community colleges and they operate under the supervision of an experienced and certified industrial hygienist. All tests are witnessed by the local union safety representative. Air sampling is carried out whenever there is reason to believe that an employee's health may be at risk from a higher than allowed exposure to a controlled chemical. We are finding that the liberal policy of air sampling where there appears to be a genuine concern among the employees pays off in improved labour relations and fewer work refusals. The test results are immediately communicated to the union safety representative and posted at the affected workplaces.

It is apparent that the control of hazardous chemicals is a very wide field affected by several acts and regulations. Some are already in force and others are to be proclaimed this year or in the years to come. Even at a relatively small plant like ours, compliance involves considerable effort and expense. It has an effect on everyone's job in the organization, so it is essential to have the active support of senior management. A responsible proactive approach to safety goes a long way to foster positive labour relations. An open, cooperative attitude with the local union safety representative could contribute to the development of a productive workforce and reduce the risk of costly work refusals. Last, but not least, it assures that we meet our goal of providing a safe work environment.

**Lillian Vine**

A word that has been used in both presentations today has been cooperation. Embodying the spirit of cooperation is the next presentation.

Bob Kelly did one tour of duty in the Canadian Armed Forces and has had 23 years of involvement in the auto industry, 3 years as an elected union representative, 7 years as a union health and safety representative, 3 1/2 years as the Chairman of the CAW/Ford Health and Safety Committee and a member of the Master Health and Safety Committee. He participated in the 1987 Ford negotiations as a member of the Master Sub-Committee for Health and Safety. He is a certified instructor in the Health and Safety Course for the CAW and the OFL and has completed Level I and Level II. He participated in the conversion of the UAW/Ford Hazard Communication Program to meet Ontario requirements.

Bruce Waechter graduated from the University of Windsor in 1964 and has been with Ford ever since. He was the Section Supervisor of Labour Relations and Hourly Personnel at the Oakville Assembly Plant from 1975 to 1983. He was the Labour Relations Planning Manager for Ford in 1983. He is a member of Ford of Canada Industrial Relations Staff and has responsibility for occupational health and safety, contract administration and hourly personnel programs. He is a co-chairman of CAW/Ford Master Health and Safety Committee and a past chairman of the Motor Vehicles Manufacturers' Association Health and Safety Committee, the current chairman of the Metal Trades Accident Prevention Association and a member of the Canadian Manufacturers' Association Occupational Health and Safety Committee. We first met after a long and difficult set of negotiations at Ford. Our Council of Governors was meeting in Hamilton and, as is the custom, a few people were invited to the dinner meeting. One of our labour Governors suggested Bruce Waechter; that Governor too had been involved in the negotiations. Bruce's enthusiasm for cooperation and for working jointly, the comfort and closeness of these two people after weeks of 24-hour days across the table from each other really made an impression. We have been calling on Bruce ever since.

## Bruce Waechter - Ford Motor Company

Thank you very much, Lillian, for the invitation for Bob and me to address your workshop regarding our WHMIS program. Earlier we heard Bill talk about the CCOHS data bank; I would like to mention that the Health and Safety Committees at Ford have attended the CCINFO training programs and have access to that data bank. Since then two of our plants are now using the CCINFOdisc and we would eventually like to see all our plants using it.

As you are aware, there are three bases in WHMIS for providing information to employees: the Material Safety Data Sheets, labelling, and the worker education programs. The major portion of our presentation today will deal specifically with the worker education and training program developed by the CAW and Ford to train Ford/CAW employees. I will talk about the development of the program, its history and the actual Train-the-Trainer program that we ran to develop trainers. Bob will talk about the implementation of the program at plant locations and the scheduling and logistics of the program itself. I was involved in the development of the program, but it is one thing to develop a program and it is another thing to implement it in the plant.

With respect to Material Safety Data Sheets and labelling, Ford has had a program in place for approximately 10 years. Prior to any chemicals being purchased by a plant location, an MSDS must be sent to the Ford Toxicology Department where an individual number is assigned to it; this is the Tox Number. The MSDS is reviewed by our Toxicology Department and fed into a mainframe computer system which is then fed to plant locations in Canada and the US. As I mentioned, this program has been in place for about 10 years. As the US and Canadian legislation came on-stream, there was more and more integrity being put into the system so that now almost 100% of the MSDSs in use at Ford are on the system. Some minor modifications are being worked on to meet the WHMIS criteria for MSDSs.

With respect to labelling, generally we rely on the supplier labels. However, plants will have the capability of producing in-house labels from our Material And Toxicology System (MATS).

The Hazard Training Program had its inception in 1985 following 1984 negotiations. The company and the union established a joint CAW/Ford committee to review and make recommendations on health and safety training needs. The committee was aware of a program being developed in the US by the University of Michigan to train Ford's UAW employees and recommended that a comparable program be implemented in Ford of Canada plants to train employees in the chemical hazards in the workplace.

In July 1985, Bob Kelly and I attended sessions in Dearborn, Michigan. We liked what we saw and arranged for a pilot Train-the-Trainer session for the local health and safety committees from the Ford of Canada plants; this session was held in Windsor in December 1985. The local health and safety committees supported the program and a task force was set up to modify the program to meet Ford/CAW needs as well as provincial and federal regulations.

The program had to provide information and training to all Ford of Canada employees on hazardous chemicals used in the workplace. We wanted a program that would be laid out in layman's terms and that would be easy to read and to understand by employees with mixed educational and ethnic backgrounds. We wanted a program that would comply with the Ontario Occupational Health and Safety Act and, of course, the WHMIS legislation that was forthcoming. At the same time, the program had to be flexible enough to meet the various Ford of Canada assembly and manufacturing operations. Ford of Canada has 10 assembly and manufacturing plants in Ontario and employs approximately 13,000 employees. The Oakville Assembly Plant, the Ontario Truck Plant and the St. Thomas Assembly Plant are assembly operations. The Oakville Assembly Plant produces the Tempo/Topaz; the Ontario Truck Plant produces light and medium trucks; and the St. Thomas Assembly Plant produces the Crown Victoria and the Grand Marquis. We manufacture glass in the Niagara Glass Plant. The Bramalea location is the warehousing and after-market supply base. We also have three engine plants, one casting plant and one aluminum plant for a total of five plants in the Windsor operations. The program had to be adaptable to suit these varied operations.

A task force was set up with Bob Kelly and Bob Greenop, a safety engineer at the Ontario Truck Plant. Their task was to create a module on legislation and to make modifications to the balance of the program as required.

The program that they came up with, the Hazard Training Program, consisted of seven core modules. These modules are (1) Legislation, consisting mostly of extracts from the Occupational Health and Safety Act, (2) the Hazard Training Program itself covering WHMIS and the right-to-know legislation, (3) Hazardous Chemicals in the Workplace, (4) Detection of Hazardous Chemicals, (5) Occupational Health Controls and Personal Protection, (6) Workplace Emergencies, and (7) Finding and Using Information on Hazardous Substances. All employees are required to take these seven core modules.

For example, in the core module on Finding and Using Information on Hazardous Substances, employees learn where they can find information on hazardous materials and how to use the information. They learn where they can get the information; they learn the requirement and application and use of labels. They learn what is required on Material Safety Data Sheets, how to read them, and where they are located. They also learn about Chemical Fact Sheets, how to read them and where they are located. They learn about additional information contained in toxicology and industrial hygiene bulletins, and they are encouraged to use the health and safety representatives and the company safety engineers as resources.

A booklet that covers all the material in the core program is then given to each employee. This booklet is in three-ring looseleaf format so that additional pages can be inserted as new information becomes available.

Once the employees have attended the core program, the generic program, they are taught more about the specific hazards to which they are or may be exposed on the job. Fifteen specific hazard modules were developed for this purpose.

We have 22 different modules. Each module, whether it is a generic core module or a selective module, is set up in the same format. Employees are taught in classroom style with 16 to 24 in a class with two trainers. In each module the trainers or discussion leaders cover the goals and major points of that module. There are films or slides that are Ford specific. There is a discussion of the film and examples of how it applies in that particular workplace. The discussion leaders cover the points to remember. There is a questionnaire which the employee completes. The handout booklet is then given to the employee.

Following the modification to the program by the task force, an intensive one-week Train-the-Trainer program was run at the University of Windsor in December 1986 to train 44 future trainers. We had representatives of the CCOHS present at that session to give an overview of the WHMIS legislation. From the summer of 1986 until December 1986 many things had to be done in preparation for the Train-the-Trainer program. We had to get a buy-in from Senior Management and budget approval for the facilities to train the trainers. We had to get budget approval to print up the material and to contract with the University of Michigan to run the program. Over and above that, potential trainers had to be selected from the various plants. We were interested in individuals who had a sincere interest in health and safety, who expressed the interest, and who had communication skills enabling them to conduct the training sessions. The trainers selected included union health and safety representatives, company safety engineers, union representatives, hourly employees, supervisors, and engineers. Some were previously trainers on the 40-hour health and safety training program that was conducted for Ford skilled-trade employees.

The Train-the-Trainer program was an intensive program. On Monday, the 44 trainers were introduced to the program. They were taught the legislative module, they were taught how to target employees to be trained; and program sessions were conducted. On Tuesday, extended program sessions were conducted on the training program and the trainers learned about the tracking techniques--who was to attend what. On Wednesday there were further sessions and on Wednesday afternoon the trainers started preparing sessions themselves. Thursday and Friday were devoted to practice teaching techniques. Several classrooms were used to conduct these sessions and eight professionals from the University of Michigan and Wayne State were in attendance at various times to assist in conducting this one-week training program.

Following the session, the trainers were ready to get back to the plants to develop an action plan to implement the training at their plant locations.

I will now turn this presentation over to Bob Kelly, who will talk more about the scheduling and logistics involved at the plants in implementing the program.

## Bob Kelly - Ford Motor Company

In December 1985, prior to the Train-the-Trainer session in 1986, all joint health and safety committees attended a session for a week to go through exactly what trainers went through. They were then asked to give their opinions of the program. This was done at several caucuses so we could each indicate what we thought of the program and what changes we thought should be made. The only change we made was to Canadianize the program.

Under WHMIS, the three major areas are labelling, Material Safety Data Sheets and worker education. Our stress will be on worker education; unless there is education, the workers will not understand the other two.

The producer or importer supplies the information to the supplier and from there you have your MSDSs and your labels that go to the employer. Everything then narrows down to the education of the worker. That is the key to the entire program--to educate the worker in the plant to understand the hazards s/he will be working with.

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Figure 1

FORD/CAW HAZARD TRAINING PROJECT
FORD MOTOR COMPANY OF CANADA, LIMITED

**Table of Contents**
**Employee Materials**

**Units**

| | |
|---|---|
| I A | - Extracts from the Occupational Health and Safety Act |
| I B | - Hazard Training Program |
| IIA/IIB | - Hazardous Chemicals in the Workplace, Part I and Part II |
| III | - Detection of Hazardous Chemicals |
| IV | - Occupational Health Controls and Personal Protection |
| V | - Workplace Emergencies |
| VI A | - Finding and Using Written Information on Hazardous Substances |
| ** | - (two specific chemical modules that are Plant related) |

**Hazardous Chemical Booklets**

| | |
|---|---|
| VII | - Caustics and Acids |
| VIII | - Adhesives |
| IX | - Polymers |
| X | - Aldehydes, Amines and Amides |
| XI | - Diisocyanates |
| XII | - Glycol Ethers and Acetates |
| XIII | - Organic Solvents |
| XIV | - Halogenated Solvents and Vapour Degreasers |
| XV | - Polynuclear Aromatic Hydrocarbons (PAH's) |
| XVI | - Lead |
| XVII | - Silica |
| XVIII | - Asbestos |
| XIX | - Metal Working Fluids |
| XX | - Painting and Coating |
| XXI | - Welding |

Figure 1 is the listing of the modules in the core program and the modules for the specific chemicals. Each plant with its committee tried to locate and form a matrix of all the hazardous chemicals in the plant and who was exposed to each chemical. We then knew which employees needed training on specific chemicals. It took time, but it had to be done. Within our plants, it is possible for employees to transfer to different jobs in our other plants within the city. It is therefore possible for a worker who has been trained in a specific chemical such as metalworking fluids to transfer to a casting plant that does not have those chemicals. That is why, when we trained our employees, we decided to train them in all the modules.

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Figure 2

FORD/CAW HAZARD TRAINING PROJECT
FORD MOTOR COMPANY OF CANADA, LIMITED

**Training Timetable for Phase I**

| MODULE | | TIME |
|---|---|---|
| I | - Legislation | 7:20 to 8:30 |
| II | - Training Program | 8:30 to 9:00 |
| III | - Chemicals, Part I | 9:00 to 9:45 |
| | BREAK | 9:45 to 10:15 |
| IV | - Chemicals, Part II | 10:15 to 10:45 |
| V | - Detection | 10:45 to 11:10 |
| VI | - P.P.E. | 11:10 to 12:00 |
| | LUNCH | 12:00 to 12:30 |
| VII | - Emergencies | 12:30 to 1:15 |
| VIII | - Written Information | 1:15 to 1:45 |
| | BREAK | 1:45 to 2:15 |
| IX | - Solvents | 2:15 to 2:45 |
| X | - Metalworking Fluids | 2:45 to 3:15 |

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Figure 2 shows a breakdown of the time frame for training on the core modules. Numbers IX and I, Solvents and Metalworking Fluids, were used in the engine plants where we have a great deal of machinery and metalworking fluids. Just about every plant uses solvents. Other plants would assign chemical modules that were specific to their workplaces.

Figure 3

FORD/CAW HAZARD TRAINING PROJECT
FORD MOTOR COMPANY OF CANADA, LIMITED

**Training Timetable for Phase II**

| MODULE | TIME |
|---|---|
| Workplace Chemicals (as introduction) | 7:30 to 8:00 |
| Lead | 8:00 to 8:20 |
| Aldehydes, Amines and Amides | 8:20 to 8:45 |
| Home Hazards | 8:45 to 9:10 |
| Caustics and Acids | 9:10 to 9:30 |
| Polynuclear Aromatic Hydrocarbons | 9:30 to 9:45 |
| BREAK | 9:45 to 10:15 |
| Painting and Coating | 10:15 to 10:40 |
| Welding | 10:40 to 11:00 |
| Asbestos | 11:00 to 11:45 |
| LUNCH | 11:45 to 12:30 |
| Adhesives and Polymers | 12:30 to 1:00 |
| *Exactly How To Do It | 1:00 to 1:20 |
| *C.B.C. Special - Plastics | 1:20 to 1:50 |
| BREAK | 1:50 to 2:15 |
| Halogenated Solvents )<br>Vapour Degreasers )<br>Glycol Ethers and Acetates ) | 2:15 to 2:45 |
| Silica | 2:45 to 3:10 |
| *Toxic Substances | 3:10 to 3:20 |
| Wrap-up and Evaluation | 3:20 to 3:30 |

*Denotes Filler Films

Phase II of the training was a little more difficult. We are talking about 16 hours of training per person and we have over 4,300 employees. The structure of the training has to be directed to each plant. We range from two 4-hour sessions to four 2-hour sessions and from 10 hours in one plant to 12 hours in another. The Windsor plants have 16 hours of training. The time frame depends on the hazards within each plant. I cannot see a plant doing hazards training that will comply with WHMIS requirements in less than 8 hours. You will notice in the illustration the asterisks beside some of the films. This indicates that these films, which were aimed at specific chemical hazards, were used as fillers during the program if time allowed.

Figure 4

03/03/88 FORD Material Fact Sheet
Tox: 019368 Product: WINDEX AEROSOL GLASS CLEANER

Supplier: BRISTOL MYERS PRODUCTS, CANADA (UCCS: B772A)

This material has not been identified against a material Specification.

----------Chemical and Physical Properties----------
This material is an AEROSOL under normal conditions.
The Specific Gravity is 0.990.
The results for Boiling Point are not applicable.
The Flash Point is +047 C (not specified).
The pH is 10.4.

* * * * * * Toxicology Review * * * * * *
Tox: 019368 Tox Status: C2 (COMPLETE TOX REVIEW) Last Revised: 12/05/85

----------Hazardous Ingredients (HAZCOM)----------

| -- TLV -- | CAS number | | Chemical name |
|---|---|---|---|
| 400ppm TWA | 67-63-0 | * | ISOPROPANOL |
| asphyxiant | 74-98-6 | * | PROPANE |
| 25ppm TWA (skin) | 111-76-2 | * | ETHYLENE GLYCOL MONOBUTYL ETHER |

* See chemical fact sheets (CFS) for additional details on these ingredients.

- - - - - - - - - - - - - - - - - - Signal Word - - - - - - - - - - - - - - - - - - - -

WARNING

- - - - - - - - - - - - - - - - - - - Hazards - - - - - - - - - - - - - - - - - - - - -

IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN
CONTENTS UNDER PRESSURE
MAY BE HARMFUL OR TOXIC BY SKIN ABSORPTION
COMBUSTIBLE
EXCESSIVE INHALATION CAUSES HEADACHE, DIZZINESS, NAUSEA AND INCOORDINATION
MAY CAUSE BLOOD DISORDERS (ANEMIA, ABNORMAL BLOOD PATTERNS)
PROLONGED OR REPEATED CONTACT MAY DRY AND/OR DEFAT THE SKIN

- - - - - - - - - - - - - - - - - Safe Handling and Storage - - - - - - - - - - - - - - -

USE WITH ADEQUATE VENTILATION
DO NOT PUNCTURE CONTAINER
KEEP FROM HEAT, SPARKS, OR OPEN FLAME
DO NOT GET IN EYES, ON SKIN OR CLOTHING
DO NOT STORE, INCINERATE, OR HEAT ABOVE 120 DEGREES FAHRENHEIT

- - - - - - - - - - - - - - - - Protective Measures and Treatments - - - - - - - - - - -

IMPERVIOUS GLOVES
CHEMICAL GOGGLES
VENTILATION (CONTACT INDUSTRIAL HYGIENE FOR SPECIFIC DETAILS)
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY
OF WATER AND SEEK MEDICAL ADVICE
REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE
FOR SKIN CONTACT, WASH IMMEDIATELY WITH SOAP AND WATER

- - - - - - - - - - - - - - - - - Special Remarks - - - - - - - - - - - - - - - - - -

THIS IS AN ALKALINE MATERIAL

- - - - - - - - - - - - - - - - Toxicology Bulletins - - - - - - - - - - - - - - - - -

GLYCOL ETHERS (TB 104)

The chemical identification and properties for this material were provided by the manufacturer. Health and safety information has been evaluated by:

Environmental & Occupational Toxicology, Occupational Health & Safety
Ford Motor Company
900 Parklane Towers West, Dearborn, MI 48126

For emergency call: (313) 337-3182 -or- (313) 323-0045 (for 24 hour service)

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Figure 4 is an example of a Material Safety Data Sheet on the product Windex--a simple product everyone is familiar with. The main hazardous chemical I selected out of Windex is Ethylene Glycol Monobutyl Ether because it has a 25 ppm TWA and it is also a skin hazard.

Figure 5

CAS: 111-76-2***ETHYLENE GLYCOL MONOBUTYL ETHER***CHEMICAL FACT SHEET
Revised: 10-87

Chemical Names (Synonyms): Butoxyethanol, 2-butoxyethanol, 2-butoxy-1-ethanol, n-butoxyethanol, o-butyl ethylene glycol, butyl glycol, ethylene glycol-n-butyl ether, glycol butyl ether, glycol monobutyl ether, monobutyl ether of ethylene glycol, monobutyl glycol ether, 3-oxa-1-heptanol.

Trade Names: Butyl Cellosolve, Butyl Oxitol, Dowanol EB, Ektasolve EB, Gafcol EB, Jeffersol EB, Poly-Solv EB.

Uses: Solvent for nitrocellulose resins, quick-drying and spray lacquers, cleaning compounds, varnishes and varnish removers, enamels, dry-cleaning compounds; used to prevent spotting in the printing or dyeing of textiles and to improve the emulsification of soluble mineral oils.

PHYSICAL INFORMATION

Appearance: Colorless liquid.

Odor: Mild, pleasant at low concentrations; unpleasant, disagreeable at 40 ppm.

Minimum Detectable by Odor: 0.1 ppm.

Behavior in Water: Soluble.

Evaporation: Slow.

HEALTH HAZARD INFORMATION

OSHA Standard: Average 8-hour exposure - 50 ppm (skin).

MSHA Standard (air): 50 ppm (240 mg/cubic meter) (skin).

NIOSH Recommended Limit: None established.

ACGIH Recommended Limit: Average 8-hour exposure - 25 ppm (skin).

Short-Term Exposure:
Inhalation: Mild irritation of the nose and throat may occur at 100 ppm. Exposure to 300-600 ppm for several hours could cause unconsciousness as well as kidney and liver damage.

Skin: Prolonged or repeated contact may cause very mild irritation. Absorption through the skin will increase the level of exposure.

Eyes: Irritation may occur at 100 ppm. Direct contact can cause pain, irritation and a slight, reversible corneal injury.

Ingestion: A burning sensation is followed by numbness of the tongue. No reports of poisoning in man are available.

Long-Term Exposure:

Teratogenicity: Spontaneous abortions have occurred when pregnant rats and rabbits were exposed to ethylene glycol monobutyl ether, but no birth defects were found in their live offspring.

Although serious problems have not been seen in man, all direct contact with the material should be avoided to prevent exposure by absorption through the skin.

Carcinogenicity: No information

Mutagenicity: No information

## EMERGENCY AND FIRST AID INSTRUCTIONS

Inhalation: Move to fresh air. If breathing has stopped, give artificial respiration. Seek medical attention, if necessary.

Skin: Remove chemically soiled clothing. Wash affected areas promptly with soap and water. Seek medical attention if pain or irritation persists.

Eyes: Flush with large amounts of water. Seek medical attention.

Ingestion: Seek medical attention. If this is not immediately available, induce vomiting with large amounts of warm salt water (2 tablespoons/pint of water). Do not make an unconscious person vomit.

Note to Physician: The first signs of serious problems in man after overexposure by any route would probably be an abnormal blood pattern. Additional exposure could damage the red blood cells and cause blood to appear in the urine.

## PROTECTIVE MEASURES

Storage and Handling: Protect containers from damage. Store away from heat, spark, and open flame.

Engineering Controls: Provide adequate ventilation. Sinks, showers, and eyewash stations should be available.

**Protective Clothing:** Splash-proof goggles and impervious gloves/clothing should be worn to prevent skin contact.

**Protective Equipment:** For levels up to 700 ppm, use one of the following:

1) a chemical cartridge respirator with organic vapor cartridges and full facepiece;

2) a gas mask with an organic vapor canister;

3) a supplied-air respirator with a full facepiece, helmet, or hood;

4) a self-contained breathing apparatus with a full facepiece.

For escape from a contaminated area, use a gas mask with organic vapor canister or a self-contained breathing apparatus.

## FIRE AND EXPLOSION INFORMATION

**Transportation:** DOT - IMO: class 6.1 (Poison B); UN 2369
label: St. Andrews Cross (and flammable liquid if flash point is below 61 C.)

**Emergency Response:** Use information in Guide #26 in DOT "Emergency Response Guidebook."

**Explosive Limits:** Lower - 1.1%. Upper - 12.7%.

**Extinguisher:** Carbon Dioxide, dry chemical, or alcohol foam.

## REACTIVITY INFORMATION

**Conditions to Avoid:** Heat, flame, or any source of ignition.

**Materials to Avoid:** Oxidizing materials.

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This Chemical Fact Sheet has been prepared by a board-certified toxicologist under contract to Ford Motor Company. Original entry January, 1985.

Figure 5 is the Chemical Fact Sheet which I obtained from our tox system, which is available to every employee. Every plant also has access to CCOHS and any worker who wants additional information is able to obtain that information. There is a process right now to combine the Chemical Fact Sheets with the Material Safety Data Sheet and these will be called the Material Fact Sheet. You will not receive an MSDS that does not have a Chemical Fact Sheet attached to it.

Also available to workers is a booklet containing a complete list of chemicals used within that plant. There are 35 copies throughout each plant, and the worker has access to the information within the booklet.

That is the training program we are using at Ford. Being able to access the information at the Centre is a great help. Most of us are not chemical engineers and we need a source of information that is easily understood and accessible. That source for me is the Canadian Centre for Occupational Health and Safety.

## PRESENTATIONS

**Lillian Vine**

We invited participants to make presentations. Chris Edwards of Van Waters and Rogers and Peter Slisarenko of Matrix International Systems Corporation both let us know they would like to take advantage of the opportunity. Any others who would like to speak about their company's program, please do so.

**Chris Edwards - Van Waters and Rogers**

WHMIS - Are We Ready?--the good news and the bad. Van Waters and Rogers is a major distributor. An extension has been given to secondary suppliers until March 15, 1989. This exempts the secondary suppliers from the labelling and MSDS requirements of the WHMIS legislation. But you still have to indicate hazardous products and give information on first aid. An MSDS is probably the best way to do it. We are not exempt for imported products and this presents a major problem for us and for the whole industry. We have talked to other companies and major suppliers who feel that it is going to be a tremendous problem.

MSDSs are relatively easy. We had a great advantage at Van Waters and Rogers in that our US company has been developing MSDSs and tracking them for several years. We produce our own MSDSs for all the products we sell. They are OSHA Communication Standard MSDSs, which in many cases, on single products, are 95% in compliance with WHMIS. We are currently on-line in Vancouver, which is our head office, and we are producing MSDSs as required by law at this time. We will be doing the same in Toronto the week of October 5, 1988. We have loaded some of the US MSDSs for our products onto the CCINFOdisc and on-line systems. We have approximately 5,500 product numbers listed in our company. This represents about 1,500 actual products and 70% of these are controlled substances as well as 70% being imported. We have labels on many of these products coming from the United States which meet OSHA Communication Standard requirements; but they do not meet the WHMIS requirements because they do not have a border or the symbols and they are probably not bilingual. The products coming from Europe have many of the European standards for precautions on them. We feel that by October 31 we will have 90% to 95% of our 1,500 products loaded into the system in English. We will probably have only 50% loaded in French because translation of these MSDSs is difficult. Those products that have not been loaded into the system will show a message informing the user to get an MSDS before that product is shipped.

Now the bad news--labels. I do not know how we are going to comply with the requirements dealing with labels. No off-shore products currently have labels. We do not have any Canadian products coming in with labels yet. Dow Chemicals has told us that their products will have labels about October 20. We have a lot of stock now. If the product is contained in a drum, it may not be difficult to obtain a label and stick it on the drum. But we have products which are in bags and shrink-wrapped individually that do not have labels. Do we have to break those pallets apart and put labels on each individual package? We sent out 500 letters personally signed by our president to our overseas suppliers; we have had responses from about 125 and most are indicating some intention of complying with the WHMIS legislation. That will help us, but they cannot do it by October 31. They have not got the information on what a label looks like; our label supplier, ICC, is getting calls every day from overseas, from the US and from Europe asking what a label looks like.

Direct shipments present a problem. Legislation says we can ship directly, but we have to supply information necessary for a supplier label. You will then have to print the labels and stick them on the product. That is what the law says you have to do.

We have US companies indicating they cannot legally put a WHMIS label on their product and transport that product within the US, because it may get diverted in the United States and never make it to Canada.

CADC (chemical distributors), CCPA (chemical producers), and CMCS (specialty producers) are presently asking for an extension to cover this import area. Imports present more of a problem than do domestic suppliers with regard to labels. However, if we supply an MSDS, the information is there on all the hazards and all the handling.

There are also problems with products like dye stuffs, pigments, and perfumes. Some perfumes contain over 300 hazardous ingredients. I understand this may be negotiated as a complex mixture which would make it easier to handle.

That is where we stand. We will be able to supply MSDSs. I honestly believe, for a prime supplier or a prime distributor of basic chemicals, there is no excuse for not being able to comply by October 31 with some form of MSDS. Labels are a different matter. Worker training is the third part of WHMIS. We have had worker training in our organization for the last 10 or 15 years. It probably needs to be formalized a little to comply with the legislation, but we have it now. Drivers are trained in the Transportation of Dangerous Goods Act and know what to do in the case of an emergency.

That is where we are and what are some problems our industry faces in supplying information to you.

**Peter Slisarenko - Matrix Interactive Systems Corp**

Matrix Interactive is a company located in Toronto and Vancouver that is dedicated to interactive video disc training solutions for the corporate and industrial marketplace.

I would like to introduce you to an option which will help meet WHMIS training requirements. It is unique, effective and cost-efficient. The program we have developed is called "The Hazard Communication Program" and it was developed initially for General Motors in the US. It was designed to help GM meet the OSHA Hazard Communication Standard training requirements. It is being used to train 400,000 GM employees in the US. It is also being used by Chrysler in the US; New York City Transit Authority has a similar program that is used to train 40,000 employees; Bethlehem Steel also is using this program.

Interactive video disc technology revolves around the laser video disc; this is similar in nature to compact disc technology for music or for CD ROM uses like the CCINFOdisc, but it uses video and audio material stored on a video disc. The disc is used with a video disc player. The material is accessed through a computer program housed in an IBM compatible computer. A computer program has been designed to designate what materials are accessed, when, how often, when testing is done and to track results and access. The computer controls the audio visual material that is being accessed. The difference between a video disc and a tape is that the disc can access audio visual material in 1-1/2 seconds or less--instantaneously compared to taped programs. This technology is being used by companies around the world. The US military is using it extensively, General Motors and Ford in the US are using it for parts and service training, Chrysler, Ontario Hydro, IBM--the list is endless. It is becoming a popular and effective method of training.

The program consists of 10 modules; the first 4 modules are designed to be a compliance series. The first module is a Hazard Communication Standard recognition, evaluation, control. The remaining modules deal with categories of specific substances, such as compressed gasses, metals, metalworking fluids. This program was designed to help GM and companies in the US meet the OSHA standards. It is now being revised so that it will meet the WHMIS training requirements. It should be available within the next few weeks.

Once the program is accessed, the individual can interact with the computer program and control the program by responding to what appears on the screen. The program progresses as the individual follows prompts on the screen. It is written to be user-friendly and prompts the user clearly at all points. Small tests and quizzes are presented throughout to ensure that the material is understood before continuing. If the user chooses several wrong answers during the quizzes, the computer will recognize the need for a review of the material which was not clear.

This program has been implemented in different ways. New York City Transit System, for instance, uses three transportation buses installed with computer systems so that the bus can travel to the worksite on a 24-hour basis. Workers at the site get on the bus, go through the program and return to work with a minimum of travel time. The estimated time saved was about 310,000 worker hours.

This program is not intended to replace the trainer. It is simply a matter of relaying base-line information. The trainer's function is not to repeat basic information, but to deal with specific problem areas and with specific hazardous chemicals.

The general consensus is that retention rates are about 40% higher for those individuals who have gone through this form of training. Training times can be reduced. A study was done of the GM training program and the report from that study stated:

> Workers taking the interactive training scored an average of 13 out of 16, or 83%, on a final test compared to 10 out of 16 for the classroom students. Of the highest achievers (two or fewer errors), 87% had been trained on the interactive system.

It has proven to be an effective way of training employees. It can also work in a classroom as an instructional tool for the trainers. It is a way to generate group participation.

**<u>Gerry Becigneul</u> - CAW - Canada**

What our union is advocating is workers training workers. We are advocating joint training with management persons training with workers from the floor. This lends credibility to the training programs. We are following the Workers' Health and Safety Centre "Train-the-Trainer" Program which is a three-week program. To get

into this program, the worker has to have a Level 1 certificate, which is a one-week course on basic health and safety. There are some mandatory modules, including WHMIS, in this course.

The instructor training program is a two-week classroom training program. We have specialists in training trainers. The cost of that program is $450 for three full weeks, which includes expenses and the cost of the trainers. Over and above that is the lost time and other expenses.

What we advocate for the WHMIS training and hazard communication program in the plants is a 16-hour training program. We are having a lot of success with it. We need about 6 hours of classroom time in generic training for WHMIS and 4 hours of specific training only where it is needed. McDonnell-Douglas has a 12-hour generic training program and they are adding another 4 hours to it. This program has been developed with management and joint health and safety committees. GM Canada has just finished training another 100 trainers in the three-week course; they are developing their own material and it is working very well. Chrysler Canada is in the midst of training trainers; we have trained several of them through the AMC Jeep plants and the existing Chrysler Plants. We have many small plants in our program.

The problems we came across in the training program has a great deal to do with language barriers and illiteracy. We have found several ways to combat these problems--interpreters can translate as the course is being taught. We are starting to get people from different ethnic backgrounds who have taken the course and who are now able to conduct training programs.

We find that once you have instructors trained by the Workers' Health and Safety Centre and the CAW, it will cost approximately $35 per employee to conduct WHMIS training in the plant based on an 8-hour day using two instructors plus materials. If you use one instructor, the cost will be approximately $20-$25 per employee.

**Dorothy Wigmore - Toronto Workers' Health & Safety Legal Clinic**

I have just come to Ontario from Manitoba, where at the Boeing Plant they have an 18-hour introductory training program which is taught by workers and managers who have been trained within the company.

The question I am concerned about is what happens in the small plants or with unorganized workers? Those two often go together and you end up with a company that does not have a health and safety committee and does not have workers who have been able to take training programs.

**Bill Hallett - Eureka Coach**

We are a small company--we have about 150 employees. I am the head maintenance person in that plant and I am also responsible for chemical control. We are in the process of trying to train our people, but we have minority ethnic employees. They do not want to have to take the courses and they have a problem understanding the language.

**Gerry Becigneul**

There is a horrendous problem with unorganized plants. Even in organized plants, there are problems. The CAW represents about 600 local unions and there is nothing legislated that states that the company must train joint health and safety committees. Some of these companies do not even know about WHMIS or workers' rights. They are putting on training programs without proper training themselves. We need legislation stating that joint committees and health and safety representatives must be trained in the plant.

**Lillian Vine**

Would that solve the problem of the small employer with perhaps only half a dozen employees? If the company does not know what the law is and the employees do not know what the law is, how will legislation make a difference?

**Gerry Becigneul**

There is not enough enforcement of the law from the inspectors who are in charge of looking after these plants. They should be seeing to it that the requirements are being carried out.

**Dorothy Wigmore**

One of the things we are wrestling with in our organization is how to reach the unorganized, because that is our mandate. What responsibility are employer trade organizations taking? In some other countries there are centres set up where people are available to smaller plants for things like this. It seems to me that trade organizations, particularly where there are unorganized plants, should look at this option.

I understand that the Ontario Workers' Centre is available for training. There are other organizations, but I am really concerned that the small plant, where often the employer is not even aware of the rules, are going to get left out. There has to be serious consideration to that issue and to the issues raised here about illiteracy and different ethnic backgrounds.

# NETWORKING - PETROLEUM INDUSTRY

**How one industry organized itself to achieve consistency and diminish duplication**

CCOHS/CCHST

**Lillian Vine**

In February and in May, we held workshops on WHMIS classification. Some concerns were expressed over and over again: "How do we know that there are not a hundred toxicologists across the country working on one chemical and none working on the others? If we all have to do this, isn't there some way to bring our efforts together?" One industry, at least, did network and set something up. I asked for the best person to speak about it and was told it was Guy Ethier. He is with us today. Guy has been leading the networking effort within the petroleum industry; it is a model that could well be emulated.

Guy Ethier is a Professional Engineer in the provinces of Ontario and Quebec. In 1978 he received a Bachelor Degree in Chemical Engineering from the Polytechnique School in Montreal. He spent 10 years working on Environmental Health and Safety within the petroleum industry. During 1985 - 1986, he was the president of the Quebec Industrial Hygiene Association. To tell us about networking within the petrochemical industry, Guy Ethier.

## Guy Ethier - Esso Petroleum Canada

I am going to talk about what the petroleum industry has been doing to network on product classification and WHMIS compliance.

There was discussion earlier about how you can get small and larger industries to network. Most of you belong to associations, whether they are trade or worker associations, and I challenge you to get together with your associations and get worker programs going as the CAW has done. I am going to give you examples of what the petroleum industry has been involved in.

The title of my presentation is "Networking in the Petroleum Industry--Are We Ready?"

PACE, the Petroleum Association for the Conservation of the Canadian Environment, is made up of eight members from all the downstream petroleum companies that refine and sell petroleum products. PACE's purpose is to promote, within the Canadian petroleum industry, development and application of the principle and science of occupational health and safety and product toxicity in environmental conservation. PACE also has an objective to foster and sponsor research and the development of programs and to disseminate information to its members.

PACE was deeply involved in the development of the WHMIS Steering Committee Report in 1983 and one member was actually a member of the Steering Committee. Two other

members were part of the Task Forces that came out of the Steering Committee. The PACE health division was involved in the regulatory review process and established a task force in September 1987 to provide PACE with the following guidelines. We were challenged to prepare guidelines for supplier labels and workplace labels that are efficient in our operations; to develop WHMIS classifications for products that are common to the industry and some employer-produced products in the worksites; and to prepare a worker education program to meet the general criteria as well as allowing each company to meet the specific information needs of their workplaces.

The objective of the exercise is to provide some level of consistency among all eight members of PACE. Of major importance is to reduce duplication of effort. We want to provide a program that includes all the information required at the lowest possible cost per unit. Experts were included in that discussion for high level technical expertise in bringing this program into place. And we want to retain the confidentiality and independence of each of the companies. We think a high level of consultation among staff specialists and the workers in the industry will develop the best program available for all of us.

What we developed are guidelines only. Each company is free to modify these guidelines to meet internal needs. All eight of the PACE members were part of every discussion and were dedicated to provide the necessary resources and time to the program.

Regarding the supplier labels, the intent was to prepare a guideline that would provide structure and format consistency in the industry.

The next topic was workplace labelling. The regulations contain very loose requirements for workplace labelling; there were some workplace labels on the market but they did not meet our requirements. PACE designed a workplace label that met its specific requirements and that was acceptable to the regulators.

Classification was a major challenge. We have products that are similar, especially in the retail end of the industry. We felt there was a need to be consistent in providing the best information to the customer and employee. We developed guidelines for the industry to classify some common products.

Finally, there was a major requirement to develop a worker education program that was consistent in the industry; it is important for us to be consistent.

Supplier Labels

Our objective was to provide the petroleum industry with guidelines to ensure consistency in the format and structure of supplier labels. The content was part of the confidentiality requirements of each of the companies, so we did not touch that part. The objective was to provide the customer or employee with a consistent way of retrieving information in the workplace and whenever receiving products.

Figure 6 - Supplier Label

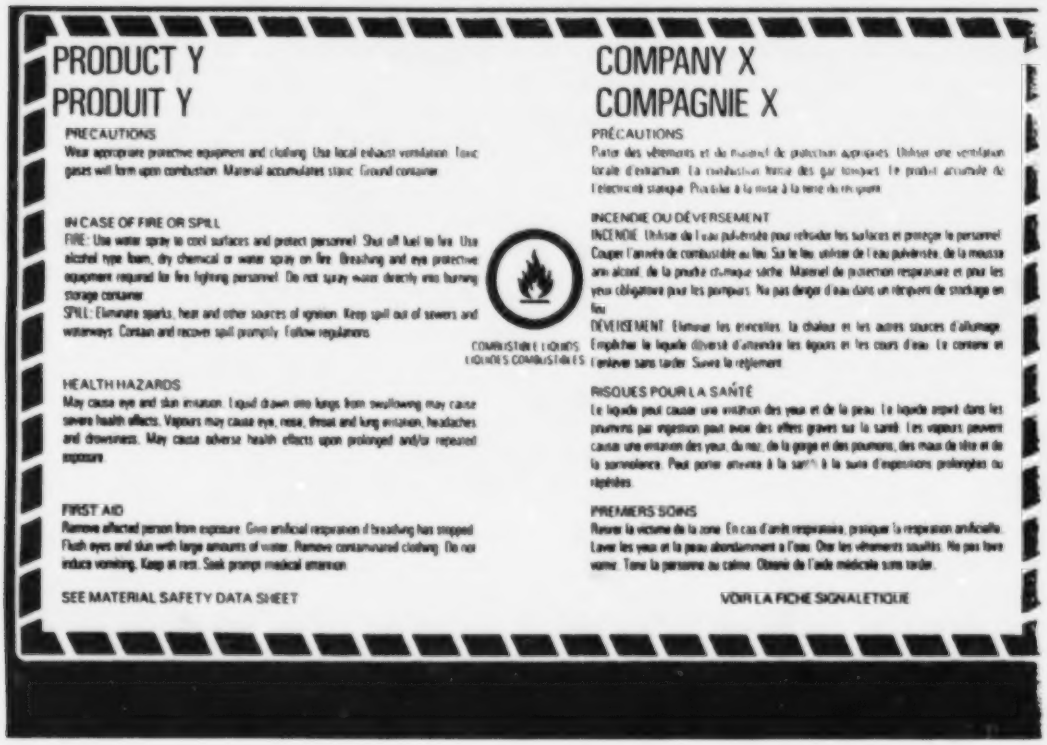
PRODUCT Y
PRODUIT Y
COMPANY X
COMPAGNIE X
PRECAUTIONS
Wear appropriate protective equipment and clothing. Use local exhaust ventilation. Toxic gases will form upon combustion. Material accumulates static. Ground container.
IN CASE OF FIRE OR SPILL
FIRE: Use water spray to cool surfaces and protect personnel. Shut off fuel to fire. Use alcohol type foam, dry chemical or water spray on fire. Breathing and eye protective equipment required for fire fighting personnel. Do not spray water directly into burning storage container.
SPILL: Eliminate sparks, heat and other sources of ignition. Keep spill out of sewers and waterways. Contain and recover spill promptly. Follow regulations.
COMBUSTIBLE LIQUIDS
LIQUIDES COMBUSTIBLES
HEALTH HAZARDS
May cause eye and skin irritation. Liquid drawn into lungs from swallowing may cause severe health effects. Vapours may cause eye, nose, throat and lung irritation, headaches and drowsiness. May cause adverse health effects upon prolonged and/or repeated exposure.
FIRST AID
Remove affected person from exposure. Give artificial respiration if breathing has stopped. Flush eyes and skin with large amounts of water. Remove contaminated clothing. Do not induce vomiting. Keep at rest. Seek prompt medical attention.
SEE MATERIAL SAFETY DATA SHEET
PRÉCAUTIONS
Porter des vêtements et du matériel de protection appropriés. Utiliser une ventilation locale d'extraction. La combustion forme des gaz toxiques. Le produit accumule de l'électricité statique. Prévoir la mise à la terre du récipient.
INCENDIE OU DÉVERSEMENT
INCENDIE: Utiliser de l'eau pulvérisée pour refroidir les surfaces et protéger le personnel. Couper l'arrivée de combustible au feu. Sur le feu, utiliser de l'eau pulvérisée, de la mousse anti-alcool, de la poudre chimique sèche. Matériel de protection respiratoire et pour les yeux obligatoire pour les pompiers. Ne pas diriger d'eau dans un réservoir de stockage en feu.
DÉVERSEMENT: Eliminer les étincelles, la chaleur et les autres sources d'allumage. Empêcher le liquide déversé d'atteindre les égouts et les cours d'eau. Le contenir et l'enlever sans tarder. Suivre la réglement.
RISQUES POUR LA SANTÉ
Le liquide peut causer une irritation des yeux et de la peau. Le liquide aspiré dans les poumons par ingestion peut avoir des effets graves sur la santé. Les vapeurs peuvent causer une irritation des yeux, du nez, de la gorge et des poumons, des maux de tête et de la somnolence. Peut parfois atteindre à la santé à la suite d'expositions prolongées ou répétées.
PREMIERS SOINS
Retirer la victime de la zone. En cas d'arrêt respiratoire, pratiquer la respiration artificielle. Laver les yeux et la peau abondamment à l'eau. Oter les vêtements souillés. Ne pas faire vomir. Tenir la personne au calme. Obtenir de l'aide médicale sans tarder.
VOIR LA FICHE SIGNALETIQUE

Figure 6 is an example of a supplier label in our industry. You are going to start seeing those labels in the workplace for products from any of the major petroleum companies. They are all going to look basically the same. You will find that the pictograms or the hazard symbols will be in the centre, the company name and the product name will always be in the same location, the French information will be on the right and the English information will be on the left. We felt this consistency was important for our customer. It makes worker education easier.

What are some of the benefits of doing this? It will ensure a consistent format to customers and their employees, make it easier to retrieve information and to communicate at the worker education program level for us internally and for you as a customer. We recognize that supplier labels constitute the first line of communication in the triad of WHMIS.

Workplace Labels

The next major area that we got involved in was workplace labelling. The objective was to develop the workplace label into a workplace awareness tool that is easy to use, that will comply with the spirit of the law, and that will integrate with the

worker education program. We tried to find tools in the commercial market at the time of development of that workplace label but we could not find anything that complied with the regulations. We had discussions with people from Consumer and Corporate Affairs; we had discussions with suppliers but no one was able to come up with something that met the requirements of the regulators. We undertook to develop a workplace label that would be easy to use, convenient and that would meet the requirements of the industry as well as the regulators. You will find that our workplace label permits the worker to transmit information at the time of decanting, for example, and conveys a message at the time of exposure. That label was developed by the PACE members. I understand this label is out in the marketplace and is being sold by some suppliers of labels.

Figure 7 is an example of a workplace label. The first section is "WHMIS Hazard Symbols." The workplace label we developed works by crossing out irrelevant symbols and leaving only those symbols that are relevant to the product. The top section identifies the product in both English and French. At the time of decanting, the worker would put the name of the product there. The next section contains all the WHMIS hazard symbols. Everyone will know these signs because they are consistent. The challenge is to cross out those symbols that do not apply to the product you are decanting.

The following section is the product handling section and it contains pictograms or symbols describing personal protective equipment. We felt that nine symbols would suffice for our industry, but it is possible to add more symbols if needed. These symbols relate to information on the MSDS and to information on the supplier label. In this case, the symbols are numbered. In our company, we provide information at the workplace on a computer and the numbers relate to information on the MSDS stored in the computer. These labels are available with the name instead of the number or without any labelling at all.

The last section is "Other." This needs to be filled in at the time the label is used if specific information is required. The label will then refer people to the MSDS for further information.

There was some benefit to us to develop a workplace label, especially in our upstream operation, which is the drilling and exploration of petroleum crude oil. We had to counter illiteracy and different languages. We wanted a tool that would be simple to use, and easily understood without written text. It is versatile; it can be used in any circumstance. It is consistent from site to site--important for contractors. We hire contractors who travel from site to site to perform maintenance duties during shut-down, especially in major petrochemical valleys, such as Sarnia or Edmonton. We wanted a tool that would be easy for them to understand and use and integrate into their own training program. It ensures consistent worker education programs and is performance-oriented at the workplace level.

Figure 7 - Workplace Label

Product Classification

The testing procedures and professional judgment for determining controlled products need to be sophisticated. The industry pulled together all their resources to develop guidelines to classify common petroleum products and employer-produced products. This was an opportunity for us to bring together the best specialists in the industry, mainly in the field of toxicology, to classify products that are common to the industry and to the trade. Specialty products were left to the individual companies to classify because of their potential competitiveness. We feel confident that our classification processes are consistent and comparable in their approach and in their auditing process so that at any time we can provide the background information necessary to support the classification.

Our challenge was to look at common petroleum products, such as gasoline, diesel, fuel oil and some of the generic site-specific materials. At the time of classification, we used all material available to our industry; we pulled together four toxicologists from the eight member companies and used published data, such as documents prepared by the American Petroleum Institute, to classify the material. We believe that this is the best knowledge in terms of product classification in the industry today.

This classification permits consistent information for the customers. For us, this is paramount, because it could have been very difficult for you to receive products that did not have the same format, structure and base documentation. It permitted us to bring together the highest possible technical expertise and ensured consistent classification information on MSDSs and for hazard awareness on supplier labels and on workplace labels. It ensured consistent worker education programs. Our intention is to monitor the technical review of the classifications and adjust our guidelines accordingly as we go through the years.

Worker Education Program

We wanted to pull together the upstream industries, which are the exploration and drilling operations represented by the Canadian Petroleum Association, and the downstream petroleum resources, through PACE, to develop a comprehensive, bilingual program tailored to the needs of the industry. Our French program is not a straight translation of the English program; the two programs are done simultaneously in French and English. At the time when we put together the task force, there were many programs available commercially, but none met the needs of the industry.

We first had to have people talking to everybody in our operations across Canada--at the drilling sites, the exploration sites, in the refineries and the commercial distribution operations--to get feedback from the employees on the development of the program. As we developed this program, there was always consultation with the health and safety committees at each of the sites. We then developed the common elements of a performance-oriented program. Each company has to add the site-specific elements to make it a comprehensive hazards information system.

Figure 8

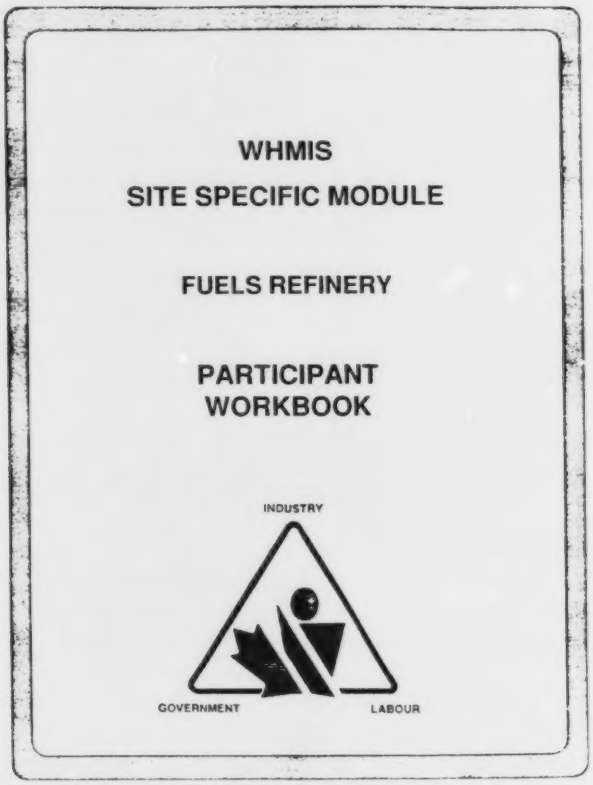


Figure 8 shows the first page of one of the participant books. Our program contains 25 modules. It is a video-based program. Modules are split into this order: The first part is an introduction to WHMIS--what WHMIS is, what an MSDS is, what a label is, what a workplace label is, and what the worker education requirements are, what the obligations of the employer are, what the obligations of the workers are.

The next part deals with the health hazard awareness--identified routes of entry, basic toxicology concepts, $LD_{50}$s, $LC_{50}$s, exposure limits and health hazard information on common products in the industry.

The third package is a site-specific package developed for the entire industry. We have a site-specific module, for example, for a drilling site and one for a refinery of petroleum fuel oils, and one for retail operations--gas bar and gas service stations. It is a video-based program interrupted with site-specific information.

The program also includes a participation workbook and leader's guide. It is designed to be used over time so it maintains interest and develops greater awareness in the workplace and keeps the workers informed.

In our industry, there are many programs in place either in refineries or in service stations. This new program is there to tag onto those others and provide a full information package.

The benefits are to avoid duplication on common elements while the specific requirements at the site are left to the individual companies. It permits the highest possible level of technical review and input from specialists in the industry. It can be tailor-made to the specific needs of the industry. It is developed in layman's language and ensures consistent messages between employees from different operations. Because we have people moving from site to site within the industry, it was important that employees would not have to be retrained each time they moved. It ensures consistent messages between our employees and contractors performing the same job.

We can say that we have a highly successful program that allows for consistency. The major focus was for consistency in the supplier label, the workplace label, classification and the worker education program. All these elements are now in place and available to all our company members. The reason we got together was to ensure consistency, a high level of consultation, a high level of technical expertise, and to avoid or reduce duplication; at the lowest possible cost for each of the companies; and still to retain confidentiality and independence of each of the companies. As we all race toward the deadline of October 31, I hope we are going to be in compliance.

## DISCUSSION

**Otto Udvardy - Borden Chemical**

We are an American-based company; our parent company started working on this much earlier than we did. Earlier this morning I heard somebody say they were having a problem Canadianizing the American MSDSs. We use the American network, a huge mainframe computer producing the MSDSs, but they are full of American references such as NIOSH or EPA. We are trying to Canadianize the information, but unfortunately the inertia in the system developed by the US company is so great we cannot change certain lines or sentences. Does any other company have the same relationship that Borden Chemical has with the US? Is it having the initial work also done in the US? How do they Canadianize? Is it a problem?

We scrutinized the American-produced MSDSs and the information is there. The reference may be wrong but the information is there. Apparently the American government and the Canadian government "discriminate" against each others' work. Some of the chemicals in the US are considered dangerous at a level of 0.1% but the same material in Canada is considered dangerous at 1%. Consequently, the standard wording when it comes out does not exactly meet the requirement.

**Mike Burnett, 3M Canada**

We face the same problem with MSDSs from the States since we are a subsidiary of an international company. We found that the MSDSs that were being prepared in the States did not meet Canadian WHMIS requirements. We had to literally rewrite them. Then we had to translate them into French and we ran into problems there. That is a massive job. We have had a team working on that for the past eight months. We are just now getting to the point where we can say we have MSDSs ready. As far as the rest of our program is concerned, we have been applying supplier labels and workplace labels to our products for the last month-and-a-half.

With respect to employee training, we looked at the training packages that were available, but found them either too detailed or too generic. We developed our own in-house training. We have the advantage of having our own production facility on-site, so we did our own videotapes as a basis of our training package. We have come up with a four-hour generic package. It covers the basic WHMIS material to which we have added departmental specifics which range from another four hours to another two days. We have completed training the trainers; they will begin the training of our people on October 11. We will be finished by the end of October.

We also have multi-manufacturing sites within Canada. We found it necessary to have a Canadian coordinator for the entire program so that we were consistent throughout the company and that helped us greatly. We were able to pull all five plants and countless distribution centres throughout Canada together so everything we are doing is the same. Whatever comes from one of our plants will be labelled the same as what comes from other plants and our worker education programs will be the same. Our supplier label looks almost identical to the supplier label of the petroleum industry but our workplace label is radically different. We chose to put our information on a computer data base in English and French. When we produce a workplace label, which we print right on site with a computer system, all we did was drop the French.

**Lillian Vine**

Guy, is this something for which you develop guidelines because some of your members are multi-nationals?

Guy Ethier

Most of our members are multi-national companies but the Canadian branches or subsidiaries are usually autonomous in doing business. We did not feel there was a need to develop guidelines to interpret what is coming from the States to what is going to be distributed in Canada. As far as I know, most of the companies are preparing everything here and relying on their American or European counterparts to provide basic information to them that will enable them to comply with the regulations. It is a support mode rather than give-and-take.

Lillian Vine

Is that the experience of most of you who are part of multi-nationals? Are you finding you have to rewrite or can you use as-is the MSDSs from the States or Europe? Or have you tested it?.

John Harrison - Nacan Products Ltd

We are adding fields and the French translation to our American data base for WHMIS, and from that we prepare MSDSs. We pull out the data that is applicable to Canada. We hope that it is going to work.

Serge Trudel - Fédération des Travailleurs du Québec

In the MSDS there is a need to list exposure limits. How do you answer that question for a substance that has a different limit throughout Canada if some of that is based on US data? The MSDS must be true for each province.

Guy Ethier

In the case of the petroleum industry, what you will find on the MSDS is the ACGIH TLVs at the time of the application of the MSDS, and if there is a change on the TLV there will be an update of the MSDS. Some companies have developed exposure limits for some of their products because they do not exist in literature; you will find that as well on the MSDS. I recognize it will be different from jurisdiction to jurisdiction. We feel it is a base knowledge that everybody can pull from to recognize the potential exposures of the materials.

**Serge Trudel**

Don't you expose yourself to some form of challenge through inspection since it will not show the TLV for the jurisdiction if that ACGIH is higher than the one in the jurisdiction?

**Guy Ethier**

If there are limits that are lower than the ACGIH in any instances in the country, we would be using the lowest possible one. It has been our experience, except for very few examples, that ACGIH's latest list has the most stringent exposure limits.

**Serge Trudel**

If there is no limit available for a substance in the jurisdiction or in Canada, but there is a limit in the US or EEC, would you show that limit? I do not think that there are any criteria. What reference should we use if we were asked to put a limit if there is one available?

**Guy Ethier**

There might be some instances where there are different limits or no limits in Canada or North America but there would be some in Europe. I do not think we have come across that situation in our company. Most of the products we handle are fairly well-known products on which there are enough studies to have developed some basic exposure limits either through provincial regulations or through ACGIH.

**Chris Edwards**

When you talk about whether a US MSDS is satisfactory in Canada, you must divide this into two areas--the mixtures and the single substances. When you get into compounds, mixtures and such, a US MSDS has some problems in Canada. When you get into the single substances, the US one is acceptable. There are some references, like ACGIH levels, that are understood. We converted ours as a direct copy of our US ones and we will start taking some references out over the next period until they are reviewed in three years. By that time it may be changed and will have WHMIS references, perhaps WHMIS classifications and TDG classifications as well. The current one we issue will not have these references.

**Larry Westlake - Industrial Accident Prevention Association**

At first glance looking at your workplace label, it appears to me that there is potential for human error. For example, if I am making it out by hand I might miss crossing off one of the things I should cross off. How do you get around that? Does everyone have access to these labels or can only certain people make out that label? I can see cases where it would not make sense to fill out hand-made labels because there are just too many containers.

**Guy Ethier**

Let me answer your last question first--what if there are thousands of containers with the same product. My company has planned to have pre-made workplace labels for these products which will be available at the workplace for the workers to pick up and put on the containers.

Now in answer to your first question. It will be fairly uncommon to use workplace labels. The intent is to have people who perform the work mark out with a marker the section that will not be applicable; this will leave only those symbols that are applicable. The adverse consequences of that was to leave in things that do not belong there. To us, that is not much of a problem; it is actually overkilling the situation and taking more precautions than you would take if some of the symbols had not been missed. So if you forget something, you might be overprotecting yourself, but that's fine. That is what we want; we do not want people injured in the workplace.

**Larry Westlake**

You mean the worker crosses this off?

**Guy Ethier**

Yes.

**Larry Westlake**

What training does the worker get?

**Guy Ethier**

The worker education program we have developed includes all the training and background information necessary to be able to read the supplier label and an MSDS and to be able to make that judgment. But there will always be a supervisor around if needed.

**Dorothy Wigmore**

I run into problems trying to interpret MSDSs when there is a section marked "protective equipment"--particularly marked "gloves" where a statement such as "Use solvent resistant gloves" is used. What have you done to ensure consistency within your industry so that meaningful information is supplied since many of the products you make are things for which wearing gloves is necessary?

**Guy Ethier**

I come from a hygienist background and I always scratch my head when Data Sheets instruct to use gloves--what kind of gloves? That is not something we have tackled as an industry; but we have on a company basis. It has been a major challenge because we have tried to include on Data Sheets our best knowledge at the time about specific protective equipment required. But there might have been a situation where the products were handled in an unexpected environment where they could be handled with other chemicals that could affect the workers. It becomes difficult to predict what kind of specific protective equipment would be required. This applies to respirators and suits and any kind of personal protective equipment. The best we can do is predict it for products used as expected, which is not always the case.

# TRAINING AND EDUCATION: A JOINT PROJECT

**Planning for it**

**The workshop**

**The funding**

**The project**

CCOHS/CCHST

**Lillian Vine**

Many of you have spoken about worker education and how you have planned for it. The next speakers are going to talk about a large joint project which developed over the last couple of years.

Clarence MacPherson is the Executive Director of the Workers' Health and Safety Centre with responsibility over policy, programs and field services. Clarence joined the Ontario Federation of Labour's Health and Safety staff in 1980 as a program developer for the Training Centre. He was responsible for organizing the training for more than 15,000 workers in the OFL 30-hour Health and Safety Certificate Program. During his six years with the OFL, Clarence directed the development of several hazard-specific modules and the OFL Level II Health and Safety Certificate Program. He has personally trained more than 400 volunteer worker instructors who serve as the backbone of the Workers' Health and Safety Centre's operations. He also edited the bi-monthly newsletter "At The Source" with a circulation of over 15,000 workers. Before joining the OFL, Clarence worked as an Assembler at Chrysler Ajax Trim Plant and served as first Vice President, editor and discussion leader for the 3,000 member UAW Local 1090. He has served as President and Campaign Manager for the NDP Durham East Riding Association. He graduated from the Labour College of Canada in 1977 and completed two years in a Business and Commerce degree program at McMaster University in Hamilton. Clarence came to us 2 1/2 years ago to talk about training and education about chemicals; he requested a workshop. That took place in March 1987. Many developments followed which Clarence will tell you about.

Presenting jointly with Clarence will be Philip Noye. He is the WHMIS Training Coordinator for the Industrial Accident Prevention Association of Ontario. After completing his MBA, Philip accepted a senior position with a light fabrication steel manufacturer. After several years in that position, circumstances and first-hand exposure made it clear to him that he wanted to pursue a career in Occupational Health and Safety. He joined IAPA as a Consultant/Trainer with his sights aimed toward accident prevention. During the last six years he received a PhD in Economics and has been IAPA's Annual Conference Coordinator. Clarence will give the background of this project and Philip will discuss the implementation.

## Clarence MacPherson - Workers' Health & Safety Centre

Lillian mentioned the workshop the Centre organized about 1-1/2 years ago on Training and Education in Chemical Information. Proceedings were published similar to what will come from the deliberations today. We were just beginning to see WHMIS

coming on-stream and its implications for the entire workforce across the country. The gist of the workshop was to get ready for WHMIS training. Now we are here today with the theme "Are We Ready?" The test will be your impressions of the presentations and discussions today and what will follow.

An interesting story has unfolded over the last 18 months with respect to WHMIS training curriculum. We have gone through an interesting and exciting process, particularly in the context of it being a joint project. This story has a theme and we are closing the chapter today, at least on the question of development of WHMIS curriculum. I would like to tell you about that story and the unique process we have gone through. I also would like to give you a sneak preview of the next chapter and that is how we implement WHMIS. I am not sure we know all the answers to that, but it is a stepping stone from this workshop--to get it implemented into the workplaces. Phil will enlighten you about strategies that we deliberated on in the implementation of WHMIS training in workplaces throughout Ontario.

I am going to go back to the workshop we had in March 1987 and I will connect it with comments that Bill Louch made about pressures and trends towards participation of the parties. Coming from the labour movement, I like to think we are talking about greater worker participation in occupational health and safety. We see the legislative developments going on across the country in terms of enshrined rights for worker participation, for the worker's right to refuse hazardous situations and the right to know. The right to know had limited application in the early stages of the legislation because there was not a uniform standard of information flowing to the workers in the form of MSDSs and labels and proper training. That trend toward participation carries with it a need for right-to-know legislation which will ensure that the information is standardized.

WHMIS was an exciting development inasmuch as it happened as a major amendment to the legislation and that it was undertaken in a tripartite context. The labour movement was very proud to be part of that process, to have contributed to the WHMIS legislation that we are now seeing adopted in legislation across the country. That was the context in which we approached the Canadian Centre. We felt a sense of pride in finally getting some standardization to Data Sheets and standardization to labels and information to alert workers to the hazards. We still did not have standardization of training. That is where it felt short. WHMIS simply put performance objectives for training into the legislation and it was up to the employers to decide how they were going to respond. There are employers representing major industries, such as the petroleum and automobile industries, orchestrating an industry-wide response. But there are many small industries and firms that are dependent on someone else to train the workers. There was a concern within labour that there would be no standardization in training.

We approached the Canadian Centre as the Workers' Health and Safety Centre in March 1987 to see whether a national workshop could be organized and whether there really was a consensus for having some standardization of the training. The workshop was undertaken. Its focus was on whether there was consensus on (a) content for WHMIS training; (b) how it would be delivered at the worksite and in the communities; and (c) access to and retrieval of the information. Those were the questions that the participants were asked to deliberate upon.

Out of that some interesting consensual agreement emerged which is reflected in the proceedings. It served as the guiding principles that we subsequently followed in putting together the program. This document was put into our operating budget submission to the Workers' Compensation Board. Our Workers' Centre is a new delivery agency in Ontario that receives funding from the WCB, like the safety associations such as IAPA and Construction. In our proposal we recommended that a program should be developed along the principles outlined in this document that would serve as a national or at least provincial program that had some standardization. We were persuaded by the WCB that it would be prudent to talk with the managers of all the other safety associations to determine if a system-wide program could be developed.

We entered into those discussions. We operated on the guiding principles in this document which are (a) that the development should be done jointly, (b) that the curriculum should be comprehensive (the recommendation from the workshop was that the training should be between 6 and 8 hours), (c) that the training should be results-oriented and have application in the workplace, (d) that the training should be somewhat generic in terms of its components; and (e) that the training should be delivered by competent instructors.

There was general consensus among the managers of the safety associations that this was a good approach to developing a program. The question that arose was where do we get funds? The next step put into place was to set up a steering committee and a project management team to put together a budget proposal and to negotiate a budget. The IAPA and the Workers' Centre, on behalf of all the other safety associations, tried to negotiate a budget with the Workers' Compensation Board in Ontario and the Ministry of Labour. The agreement was that we would work together as a tripartite group and that the program would receive funding to develop the initial audio-visual productions and printed material. The budget was provided by the Ministry of Labour; the safety associations and Workers' Centre would provide the staff and technical expertise to put the package together; the Workers' Compensation Board would provide the facilities and equipment to word-process the materials.

Once we had the funding, we proceeded to put the program together and develop a curriculum. Funding was made available by the Ministry to train a group of trainers who would be available in the communities to provide this program to workers employed by small firms. We were to develop a strategy to make this training become a reality.

Figure 9

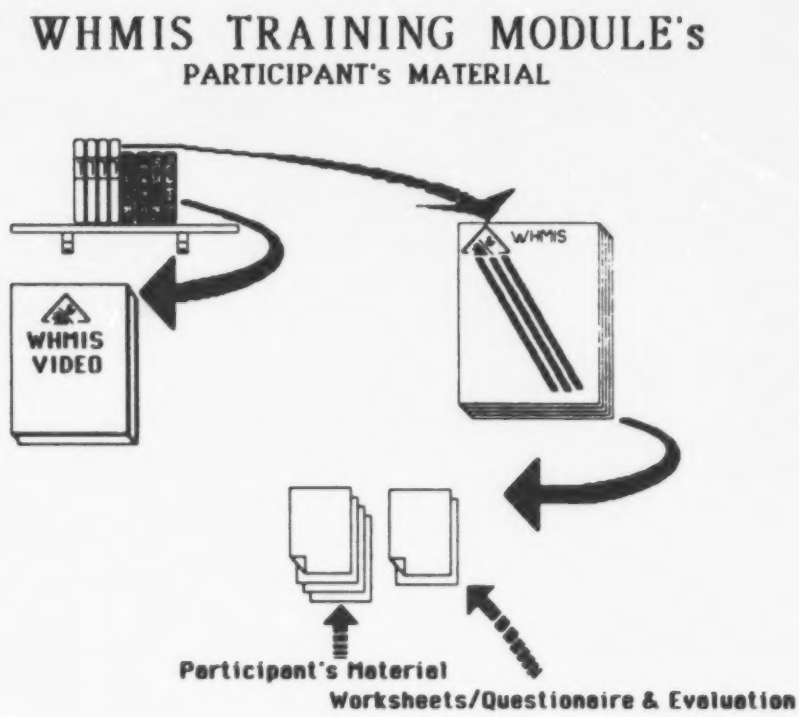


Figure 9 illustrates our intent to provide a library of resources any firm or organization can draw upon and use along with worksite specific information to meet the WHMIS training requirements. Each company chooses what is suitable for its needs to implement training at the worksite.

Figure 10

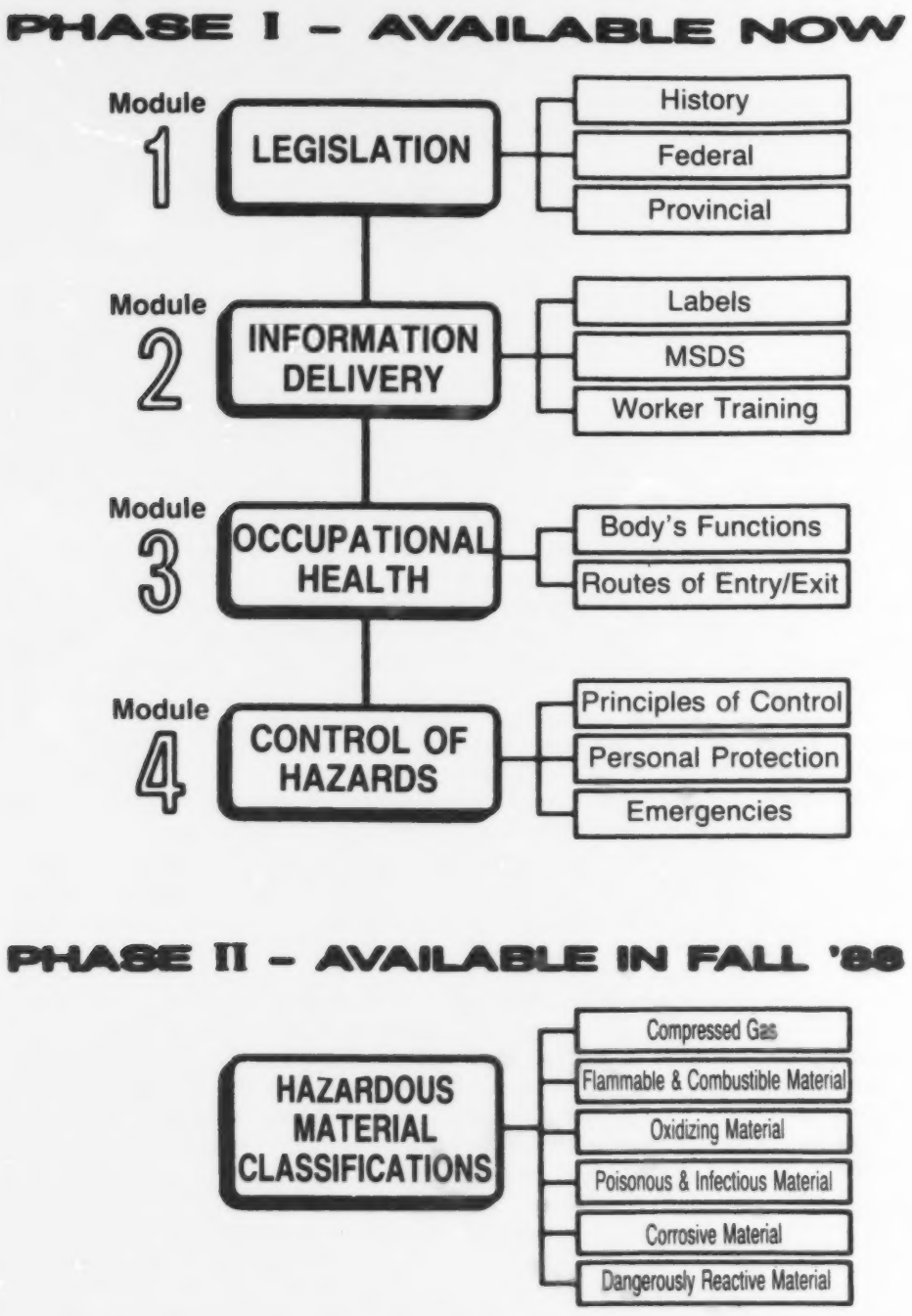
PHASE I – AVAILABLE NOW
Module 1
LEGISLATION
History
Federal
Provincial
Module 2
INFORMATION DELIVERY
Labels
MSDS
Worker Training
Module 3
OCCUPATIONAL HEALTH
Body's Functions
Routes of Entry/Exit
Module 4
CONTROL OF HAZARDS
Principles of Control
Personal Protection
Emergencies
PHASE II – AVAILABLE IN FALL '88
HAZARDOUS MATERIAL CLASSIFICATIONS
Compressed Gas
Flammable & Combustible Material
Oxidizing Material
Poisonous & Infectious Material
Corrosive Material
Dangerously Reactive Material

Figure 10 illustrates Phase I and II of our program. Module 1 is one of the core generic modules; it deals with legislation--the history, the amendments of both federal and provincial legislation.

Module 2 deals with the information delivery system; it explains the basics of labels, the nine sections of the Material Safety Data Sheet, the worker's right to be trained in information pertaining to labels and MSDSs, and the application of both supplier labels and workplace labels in the workplace.

Module 3 deals with basic generic information on occupational health--how the body functions, the body systems and how they are vulnerable to exposure to the hundreds or thousands of chemicals that workers come in contact with.

Module 4 is a generic unit on the basic principles of control, control methodology, use of protective equipment, and emergency response measures.

These are generic units identified in the workshop held in March 1987 that ought to be consistent for all training for all workers. In addition to these units, booklets have been developed dealing with these modules; they are available in print and electronic form. In addition to those booklets, eight hazard class booklets are being developed. In the illustration you will notice that under the Hazard Classifications section there are only six hazard classes for which there are labels. The Poisonous and Infectious Class breaks out into three subdivisions--Very Toxic, Toxic, and Biohazardous/Infectious. Each booklet has the classification symbol on the cover to indicate the material it deals with. It contains basic information in layperson's language explaining the meaning of the symbol, what kinds of substances are under this classification, and what kinds of protective equipment one should use.

The modules I have described are supported by 14 videos each about 8 minutes in duration. The combination of the visual presentation with the printed material will inform the worker what the terms in the booklets mean. These videos will show what a carcinogen is and how the body systems are affected. This information is subsequently linked to the MSDS and shows the worker where these terms show up on the MSDS. It is a building-block approach to presenting the information. Ours is a structured program that communicates the information in a logical way showing the application to the workplace.

The legislation is performance-based legislation. With each of the booklets, we have also developed a leader's guide containing detailed session plans (Figure 11) which state the performance objective. Performance objectives for the workers are spelled out in the plan. These are quick-glance guides for the course facilitators to make sure the material is covered, that participants practice in the classrooms, that teaching aids and techniques common to adult education are used, and that there is evaluation to measure performance and learning.

Figure 11

## Detailed Session Plan

TERMINAL OBJECTIVE: The participants will have sufficient knowledge of the amendments to the Occupational Health and Safety Act to enable them to ensure that suppliers and employers fulfill their duties and responsibilities to WHMIS under the Act

| TIME | PERFORMANCE OBJECTIVES | SPECIFIC CONTENT | PARTICIPANTS' PRACTICE | TECHNIQUES/ AIDS | EVALUATION |
|---|---|---|---|---|---|
| ' mins | Explain how WHMIS is implemented in law | WHMIS gives workers "Right to Know" about hazards by<br>Warning labels on containers<br>MSDS<br>Worker training | Remember and discuss the three elements of the "Right to Know" | Brainstorm with flipchart | |
| 0 mins | Explain how WHMIS is implemented in law | WHMIS & Law<br>Two packages<br>Federal (Bill C-70)<br>Passed June 30, 1987<br>Effective October 31, 1988<br>Makes importer, manufacturers & other suppliers subject to WHMIS<br>Amendments to<br>Hazardous Products Act<br>Controlled Products Regulation<br>Created procedure for protection of trade secrets<br>Created the Hazardous Materials Information Review Act<br>Applied WHMIS to federal employers and workers<br>Amendments to Part IV, Canada Labour Code<br>Canada Occupational Safety & Health Regulation<br>Provincial (Bill 79)<br>Passed June 30, 1987<br>Effective October 31, 1988<br>Applied WHMIS to provincial employers & workers<br>Amendments to the Occupational Health & Safety Act<br>Created the "WHMIS" Regulations | Identify the two legislation packages that implemented the WHMIS concept | Discuss with overhead | List the two legislation packages that implemented the WHMIS concept |

That is a synopsis of what we did in undertaking the principles of the consensus that emerged from the workshop facilitated by the Canadian Centre--take that consensus, build it into a project proposal, negotiate funding with the WCB and Ministry of Labour, and among the delivery agencies work together on developing this program. This reflects a tripartite effort in putting a program together that has generic applications to workers throughout the province of Ontario. It is a program that is available to all workers through a delivery network being developed by the delivery agencies. Both the IAPA and the Workers' Centre are doing Train-the-Trainer programs. Trainers are made available at the worksite and in the communities to deliver this training package to workers in Ontario.

What we have produced makes the job of training in the workplace much easier. The joint health and safety committees or the hygiene departments can focus on worksite specific content to add to the generic package. This will give this program total application to each individual workplace. Phil will talk about the program and its implementation in the province.

## Philip Noye - Industrial Accident Prevention Association

The Industrial Accident Prevention Association is a federation of class associations made up of member companies in Ontario. We have a mission.

Our mission is to serve employers, supervisors and workers by efficiently and effectively providing and promoting occupational health and safety education. Our purpose is to contribute to the well-being of those persons by assisting in the prevention and elimination of workplace injury and illness. By working together with Clarence and his organization, our mission will be fulfilled and our purpose immeasurably enhanced.

In the true spirit of working together, the IAPA and the Workers' Health and Safety Centre are providing WHMIS training to management and workers across the province on a scale never before witnessed. Thousands have already been trained. Thousands are registered and scheduled to receive WHMIS training in the next few weeks.

Through exceptional marketing techniques, each day many more thousands are being made aware of their legal responsibilities and accountabilities. The safety associations are ready, willing and able to take on this enormous task--able because of this spirit of cooperation.

WHMIS - are we ready? Yes, we are ready; but where do we go from here?

The simple truth is that WHMIS awareness training and Train-the-Trainer seminars merely reflect the infancy stage of the WHMIS program. The program itself will have to be monitored on an annual basis to answer basic questions like: Are employees requesting Material Safety Data Sheets? And of more importance: Is the program working? Are you monitoring the objectives? What has been the worksite application of all the training that has taken place?

The near future offers even more challenges which will have to be dealt with.

Special needs--I am referring to literacy, not just in English or French, but in the dozens of other languages of the employees who make up the workforce, in so many instances, across the province. How are you going to ensure that they understand WHMIS and their right to know? What are you going to do to change the fact that these people simply cannot read a workplace label let alone a Material Safety Data Sheet?

Inventories--we all know that you will soon have to do one. How can the task be made easier, simpler, yet thorough enough to meet the legislative requirement? What will you keep or throw out? How do you properly dispose of that which you have decided to throw out?

What substitutes can you use in an attempt to get rid of the hazardous situation that you are presently in? Where do you get this kind of information?

Physical agents such as noise, vibration, radiation--how are you going to deal with these seemingly unsolvable problems? How are you going to engineer them out? Where can you go to get the expertise to assist in the crucial decisions that will have to be made?

I have posed many questions to you regarding the near future. I deliberately chose the word "you" when asking each question. True, it will be up to you to properly handle the areas which I outlined. But do not think for one moment that you are out there all alone. We, your safety association, will be there to help you get started, to train and guide you, to assist wherever possible. We will be there as a resource. Call us, that is what we are there for. We will not do your work for you, but we will definitely inform you of the proper procedures to follow, be it air sampling, noise level surveys, or others.

The current WHMIS training that you are taking should not be shortsighted in scope. Have your company representative take IAPA's instructional techniques seminar along with the WHMIS Train-the-Trainer seminar. You will end up with a competent instructor who, on full exposure to other safety seminar content, will have your organization on the road to self-sufficiency through competent in-house training. This is the ultimate goal you should be striving toward. We will be there to help and serve you any way we can.

We have a mission and a purpose. I hope that you will endeavour to make your purpose one designed to contribute to the well-being of your employees by striving toward the prevention and elimination of workplace injury and illness.

## DISCUSSION

**Lillian Vine**

You have heard presentations about where some industries are and about some of the training that is going on and what led to it. Are you ready? Are there experiences you want to share? Is there something resulting from today which will help make your job easier? The floor is open.

**James LaChance**

I started to train using the OHSEA (Occupational Health and Safety Education Authority) package as my guideline. Unfortunately, our deadline is October 31, 1988. I did not see your package until just a few weeks ago. Has it been on the market for a long time? Are the videos available now? Is the entire program finished? At the time I was looking for the full package, it was not available so I had to develop my own program.

**Clarence MacPherson**

The four core units have been on the market since June. Initially 50,000 were printed; they are now going to print again. The eight hazard class booklets that complement these have been written and are at the printers, but it will take three or four weeks to get printed. The 14 videos are completed. The program is available in both French and English. Translation into French is being done of the hazard class booklets; by the end of October the entire program will be available in French and English.

**James LaChance**

Our logistics show that 20% of our workers are illiterate. The package was very difficult to use for these workers.

**Clarence MacPherson**

We tried to put our staff to work developing the initial generic program in French and English. Part of the plan in the next few months is to try making the program available in at least six other languages to meet the special needs of workers. That is going to take additional resources. The Ministry of Labour made an initial commitment to fund the development and printing costs of the first run of the material, as well as the development of the audio-visual material. For an ongoing budget to support the ongoing development of this project, we need to rely on recovery monies. So as the English version gets out into circulation and usage, the recovery money will be applied to translation into other languages and development of videos in other languages.

**Lillian Vine**

The problem of illiteracy is one that is being addressed across the country. Perhaps worker protection programs will be able to take advantage of the funding being made available for literacy.

**Serge Trudel**

There is a major difference between your presentation, Ford's and the petroleum industry's when it comes to specific subjects and details of classification of hazards. How can you address the problem of very specific aspects of each workplace? You just cannot give a manual to a trainer and say, go to this address and give a session that will apply specifically to the risks of that industry. There must be some adaptation of the material to target the specific types of hazards of that workplace related to the MSDSs. The Act says that the training must be related to each MSDS for the substances that the worker will be in contact with. One solution I have heard is to give a package to someone, train him/her to give a session and the specific session will have to be done by his own company.

**Clarence MacPherson**

As an illustration, the petroleum industry has developed 25 modules. As I understood the presentation, there were 2 generic modules and a host of specific modules depending on the specific application, whether it is a gas bar or a drilling operation. So in one industry sector there are 20 units that need to be produced in video and print. If you extrapolate that across all the industry sectors you could theoretically have hundreds of modules specific to specific workplaces. Even then they are not specific to each workplace, they are just specific to the chemical family or chemical. In terms of what could realistically be produced at this point, we opted to use the hazard classification system of WHMIS as communicating information in a generic form.

When you get to the workplace and you need to present information on a specific chemical, say benzene, there are a couple of things one can build on. First, the generic program will provide the basic background in principles of control, the health hazards, the way in which benzene would affect workers through inhalation or ingestion or whatever. Those terms are explained and the Data Sheet for benzene is provided. You give the worker the specific Data Sheet on benzene as specific content at that workplace.

Secondly, one can draw upon other sources for specific information on specific chemicals; materials are available through the companies and consulting firms that have developed them.

Thirdly, the Canadian Centre can be used to help relieve some of the problem. They develop fact sheets on specific substances.

Creating a generic program that covers all chemicals or chemical families would be a task that would cost millions and millions of dollars and that would take a long time to produce. We did not have time to do it given the deadline for implementation of WHMIS training. That is why we have gone with 12 units only.

**Serge Trudel**

How can we answer the task to apply education to situations that will differ from workplace to workplace? There does not seem to be an answer. The Quebec chemical industry has 1,000 employers of all sizes with 30,000 to 35,000 workers. It would take 4 or 5 instructors full time for a full year just to be able to answer the demand for each of those workplaces, just for generic information. If one had to look at specific risks for specific uses and handling, it means a lot of time and preparation. Some of the answers come from a more general approach to the problem. But we will not be able to adhere to the Act and tell the worker how to handle a specific chemical from the time it enters the workplace until the time it leaves the workplace. For example, if we are talking about protective equipment and we get into very specific disposal techniques, how do we answer that question--dispose according to a general act of environment in your local municipality? That is a lot of information. You will need to do some detailed research or try to get very specific information as how it applies in your workplace. That is what we are asking for; education that applies in my workplace. The worker who receives training must be able to perform his/her work safely after that training.

**Guy Ethier**

The program developed by PACE is like vanilla pudding. At the worksite, you add your own flavour to these programs. We are trying to have a program that will not be a one-shot deal where on November 1 it is over. We want a program that will span years. There are interruptions in our program and a lot of input from the workers on a one-to-one basis. We are developing strategy for the risks related to the operations each worker is working on. In the leader's guides in some of the manuals, the leaders are required to prepare a list of agents for the worksites. We run worker education programs on a worksite basis rather than for an entire refinery. They develop inventory, they prepare MSDSs and within workshops on a one-to-one basis, workers will be asked to come up with the preventive measures for the risks they have identified as being in their own workplace. There is constant interaction. We have found that this approach satisfies the workers.

We have a generic package and at the worksite there is interaction on a one-to-one basis between the workers and the instructors to develop specifics.

**Clarence MacPherson**

On the delivery end of this program, I articulated that there are two components--the common generic material that explains all the terms on a Data Sheet and general principles of control, and the worksite specific. No external body can develop worksite specific content for every workplace in Ontario. That has to happen at the worksite. At best, you could do groupings or sectoral-specific material. We hold a two-week Train-the-Trainer program to address the worksite specific development aspect. It concentrates on teaching both labour and management

personnel how to develop curriculum and how to deliver curriculum and it hones their presentation skills. These people go back and not only constitute the delivery team for the WHMIS program, but also put together the worksite specific programs. That is what happened in Ford; the delivery team was given the mission of putting together the worksite specific programs in those ten different facilities. They would draw upon other resources for the different chemical families. They would identify the safe use instructions for handling chemicals and if there were no procedures in place, they would develop them. These instructions do not always exist in writing, so there is a need for the joint health and safety committees to play an active role in developing that kind of content to supplement the generic program.

If you instruct workers in the generic material and they can take an MSDS on methyl ethyl ketone and read it and understand all the terms and what the real hazard is, the next logical question is going be "What specific procedure should I follow in handling this substance?" The supervisor ought to be able to answer that question. If there is no specific procedure, then one needs to be written. That has to happen at the worksite. The best we can do is try to develop the kind of resource persons, the delivery team, to do that.

**Kuldib Keith - Copeland Laboratories**

Keeping in mind the extension available to secondary manufacturers, what is the deadline for worker training? Would it be 90 days after March 15, 1989?

**Clarence MacPherson**

The legislation comes into effect at the end of October. There is a 90-day period in which to get the compliance in place. So that takes you into early January of 1989.

**Kuldib Keith**

Does the extension for secondary manufacturers affect that deadline in any way?

**Clarence MacPherson**

My understanding is that the extension only pertains to labelling and MSDSs, not the training.

**Kuldib Keith**

How detailed does the training have to be? Obviously, it will depend on the workplace practices, the chemicals you handle, and the experience. Would 2 to 4 hours of training for an experienced worker--anyone who has been there for more than a year--be enough? It would cover all the important aspects of WHMIS, the label, the MSDS and the hazards associated with the chemicals.

**Philip Noye**

I think one has to be careful with the concept of the most experienced worker. Experienced in the job, but is s/he experienced in labels? Experienced in identifying labels s/he may never have seen before? Will s/he know that it is a proper and complete workplace label and acceptable in the workplace? Is the MSDS that has been issued full, complete and proper and is it an acceptable Data Sheet? Whether a worker is an experienced worker or a new worker, s/he has to be trained in a workplace label and you have to ensure that s/he understood what you transmitted. The person also has to be trained in where to get further information from the MSDS. You must monitor that this procedure is ongoing. That really is what WHMIS is all about.

**Kuldib Keith**

I can see situations where this can be done quite adequately in 2 hours. Is there any objection to that? Why does it have to be 8 or 16 hours?

**Philip Noye**

From a job-specific point of view, I could not agree with you more. I think that if you have a fully-competent person in the knowledge of WHMIS and rights, duties, responsibilities and accountabilities, and the ability to transmit that information to the workers on site understandably, then you have met the requirements of WHMIS.

**Kuldib Keith**

Is there a need to test the worker after the training to make sure that s/he has absorbed the content of the WHMIS regulations?

**Philip Noye**

To cover the whole aspect of WHMIS education, I think some form of testing or information sharing must be present. It is very basic but WHMIS is very basic.

**Gerry Becigneul**

Of course there are problems with training ethnic groups. But there is a way of getting around these problems. Some time ago we did instructor training for company and union people. The Multicultural Society sent interpreters to translate as we instructed. At another workplace, several people in the class were deaf. We had to get people to use sign language as the class was going on.

I try to find people from ethnic groups interested in taking instructor training. It is working out. We have a few and when they instruct there is a lot of credibility because they are from the shop floors. On other occasions, I have asked trainers from another plant to come in to do some training for us.

There are instructor training courses that allow these people to go back to their plant and teach WHMIS. How can they answer particular questions if they have only had a one-day training program? It is very difficult. That is why I advocate the three-week program; there is a fair amount of understanding. It is expensive at the beginning, but once companies have their own instructors in the plant, the only cost is time off the job plus the materials. You have built-in instructors to review the program annually. If there are any changes in the processes, you have to retrain. There is also the problem of people changing jobs in the plants. A small training package can be developed that lasts one hour or so for employees changing jobs within the plant. After the 31st of October, anyone being hired is going to have to be trained.

I would urge everyone to get their own instructors within their own plants.

**Philip Noye**

I have found two major resources that can be helpful in ethnic communities; they are the church and the local newspapers. When asked to assist in the health and safety program for the community, they have responded very positively and competently by being able to address various dialects. They are non-profit organizations which have a vested interest in their own community.

**Gerry Becigneul**

Speaking from a union point of view, we do lend the union hall facilities at minimal or no charge to put on health and safety programs. Based on a perfect classroom size of approximately 16 people with one instructor, a week-long course costs about $150 per student; this includes materials and accommodation expenses for the instructor. If a local instructor is used, it is even cheaper. We make every effort to use a local instructor because we have to recover the instructor cost. The instructors get $150 per day plus expenses.

**James LaChance - Foseco Canada Inc**

How does the union expect management to deal with illiteracy in the workplace?

**Gerry Becigneul**

There is a program funded by the government that is called BEST - Basic Education Skills Training. It is a low-cost program that takes one or two persons from the workplace to instruct. The government pays for the cost of a two-week course to train them. These workers then train workers in the workplace in basic skills. Once the instructor has completed his/her training, s/he is given an hour a week for preparation time then the company pays the instructor and the students for one hour, but the students have to donate an hour of their own time. The Ontario Federation of Labour or the Ministry of Skills Development can give more information about this program.

**Dorothy Wigmore**

I am concerned with the amount of time the training for WHMIS will take. As someone who specializes in teaching people about Material Safety Data Sheets and in teaching workers about health and safety, I know this training takes more than 2 to 4 hours. I have put together a course for people who work in the construction, sealing and caulking, insulation industry and I had to take material that is used in the 30-hour program by the Ontario Federation of Labour and put it into 4 hours. I know how difficult that is; on looking at the evaluations from the testing process, I know how little got across in that amount of time. The program that Clarence and Philip are talking about is largely based on what was originally a 30-hour program. If people are really serious about workers understanding Material Safety Data Sheets and labels and the hazards they face at work, it is going to take more than 2 to 4 hours. Once they have that initial training under their belts, 2 to 4 hours is appropriate. We have heard people today talking about up to 16 hours of training.

**Clarence MacPherson**

The position of the labour movement in Ontario is to provide a minimum of 8 hours training. Speaking as an educator, I would say that the program should be a minimum of 16 hours. Any educator who has to convey this quantity of information, both generic and worksite specific information, does not want to do it in an hour or two. Trade-offs have to be made and that needs to be done at the workplace. If you have a group of office workers not exposed to any chemical hazards or a minimal number of chemical hazards, it becomes more straightforward to make a decision about the duration of their training. If you have a group of workers immersed in solvents and degreasing agents, the training time required has to be reassessed. The view of the workshop group that initially deliberated on this program in March was 6 to 8 hours; the position of labour is a minimum of 8 hours; some people are talking about 16 hours of training. You have to work it out based on needs.

The other thing that is getting traded off is a perspective on compliance. What is the minimum one has to do to comply with the legislation versus the perspective of the needs of the workers? I do not know the simple answers. I know that if I were asked to present this program, I would want 16 hours.

**Dave Whaley - Ministry of Labour**

I am speaking on my own behalf as a professional, and not on behalf of the Ministry. I see two things that really need to be developed. In the Controlled Products Regulations and the Model OSH and the other documents which have been put out on WHMIS, there is a specific idea of what constitutes an adequate MSDS and label. When it comes to worker training, that is far more vague. I think there is a need for a consensus, a tripartite development, of what are adequate criteria for a good worker training system. What about reinforcement? That has been alluded to but not systematically by anyone. The interactive computer system is one way that ongoing reinforcement might be provided in a workplace. There is the concept of attention span. Some of us are used to accepting a large amount of academic information in a compressed time span; many of the people in the workplace are not. If you give them a one-day 8-hour session, the amount that will be retained can be very limited if they are not used to that kind of activity. I would suggest that an on-going educational program broken up into small pieces needs to be developed in a way that will be pan-Canadian and acceptable to everyone.

I would also like to see developed, by consensus, a marketing approach to help employers realize the importance of spending the requisite amount of money for an effective training program, not one which just minimally complies. This ties in with adequate training criteria.

**Clarence MacPherson**

I think that the Canadian Centre has done a significant piece of work in bringing about some consensus on the work that we have done in Ontario. That is predicated on a consensual base of understanding and principles. This is a difficult thing. At the workshop in March 1987, we had a term "forced consensus." It is difficult to bring parties of different persuasions and perspectives together and get unanimity of views on adequate time to do the training and the other aspects. We struggled with those areas in the workshop, came up with some good recommendations. We then incorporated them into a program that is tripartite in its development and that is being marketed to employers through a network of delivery agencies in Ontario. That is a significant achievement.

Your point about reinforcement is important. If you have the delivery teams at the worksite where they have delivered the training, the workers have access to them forever. If questions come up during the workday, they have a resource at the workplace to help reinforce the training. The delivery team can also become the evaluating team. The strategy ought to be one of creating that sort of resource on site.

Beyond that we are moving into the area of the ideal. We struggled with that in the initial workshop and we made some headway, but we did not get as far as you want us to be.

**Serge Trudel**

I do not like that kind of comment. Everything is dumped on the worker--he has to be trained and then he will be safe. WHMIS has nothing to do with that. WHMIS is to provide better and safer workplaces. It is supposed to get the employers to be more preventive in the way they address workplaces. WHMIS is not for the training of the workers because they do not know when to wear their gloves and goggles. WHMIS is there to try to get the workplaces clean. We want training to get the information to allow us to do something about the workplace. We would not need WHMIS if the employers were doing what they should have been doing in the first place. Training is just a way of making people aware of the problems. The problem with chemicals is the long term effects--that is why we are looking for the information. Not to tell us we have to wear goggles or gloves--we want to get rid of them; we want some improvement; we want long-term solutions to provide safety. That information will trigger action from us to get those things done. The employer will have to tell employees that the chemicals they are using are cancer-causing and they will have to think twice about using that chemical. The Data Sheet will tell you that a material is cancer-causing; will it tell you what other material you can use to replace it? No. That is the way the information should be used--to provide the safest materials and the best conditions. Not to train people because they do not know how to work.

**Lillian Vine**

Thank you, Serge. I am sure the objective of healthy and safe workplaces is shared by all.

I want to thank all the panelists--Philip Noye, Clarence MacPherson, Guy Ethier, Bob Kelly, Bruce Waechter, Andrew Kramer and Bill Louch. I also want to thank all of the participants--it has been a very good day.